



Contents lists available at ScienceDirect

Journal of Hand Therapy

journal homepage: www.elsevier.com/locate/jht

Research Paper

A collaborative interdisciplinary approach for trigger finger management

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ARTICLE INFO

Article history:

Received 19 August 2024

Revised 10 December 2024

Accepted 23 December 2024

Available online xxxx

Keywords:

Trigger finger disorder
Physical therapy modalities
Conservative treatment
Interdisciplinary

ABSTRACT

Background: Stenosing tenosynovitis, or trigger finger, is a common cause of hand disability. This study outlines a trigger finger management protocol that redirects referrals for surgical consultations to conservative management first.

Purpose: The primary outcome variable was the protocol endpoint based on the resolution of trigger finger symptoms (i.e. pain and triggering). Secondary outcome measures were to identify which patient characteristics were associated with an increased need for (i) surgical management and (ii) corticosteroid injections.

Study Design: Retrospective chart review.

Methods: The study sample included all patients referred for surgical consultation for trigger finger who were redirected to physical therapy first between the dates of August 2018 and January 2023 ($n = 72$). Participants initially received a physical therapy assessment and three treatment sessions. Further management was determined based on patient presentation following our protocol. Descriptive analysis involved frequency calculations of studied variables. Comparison of patient characteristics and treatment modalities across different sub-groups was examined as well as associations between various patient characteristics and increased need for (i) surgical management and (ii) corticosteroid injection.

Results: Seventy-two patients were included in the study, and 60 patients completed the protocol. Of these patients, 22% ($n = 16$) resolved with physical therapy (PT) alone, 48.5% ($n = 35$) resolved with 1–2 corticosteroid injections following initial PT management and 12.5% ($n = 9$) were referred back for surgical consult. Sub-group comparisons revealed no significant differences in patient characteristics and treatment modalities across patients who resolved with physical therapy alone, physical therapy plus 1–2 injections, or in cases referred back for surgical consults.

Conclusion: The interdisciplinary care protocol in this study demonstrated that conservative management was successful in a majority of cases; facilitating timely access to evidence-based care, including corticosteroid injections and surgical management if necessary. Physical therapy treatment provides self-management and education strategies to those requiring further interventions, potentially reducing recurrence rates.

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Study design

This is a retrospective chart review of patients with trigger finger who were referred to a plastic surgeon specializing in hand surgery (CT) in Saskatoon and re-routed to physical therapy before consideration for

surgical management. The study was approved by the University of Saskatchewan Biomedical Research Ethics Board (Bio4200).

Introduction

Stenosing tenosynovitis, or trigger finger is the fourth most common reason for referral to a hand surgeon and one of the most common causes of hand disability.¹ Trigger finger affects more than 3% of the general population and up to 20% of people with risk factors for developing the disease including diabetes mellitus.²

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With the current healthcare landscape in Saskatchewan, Canada, several challenges arise for patients seeking assessment and management of trigger finger. These challenges include limited access to general practitioners and subsequently long wait times once a referral is made to a hand surgeon.^{3,4} In 2023, the median wait time from GP referral to consultation with a plastic surgeon in Canada was 25.5 weeks and from initial consultation to treatment, 23.9 weeks.³ In the study location (Saskatoon, Saskatchewan) 42.1% of patients wait over 12 months for surgery.⁵

The benefits of conservative treatment for the management of trigger finger have been well-reported in the literature.^{1,2} Conservative treatment options include physical therapy, corticosteroid injections, and orthoses. Success rates (i.e., absence of pain and triggering) with physical therapy management of trigger finger has been reported as 69%, with low recurrence rates.⁶ Likewise, corticosteroid injection is an effective treatment with success rates reported up to 97%, but with high recurrence rates.⁶ Despite this, many patients continue to be referred for surgical consultation as a first-line management option. Considering wait times to see a plastic surgeon, this referral path is delaying appropriate evidence-based treatment.⁷

There remains a lack of clarity regarding how to streamline healthcare navigation for patients with trigger finger to ensure timely and appropriate treatment. Our study addresses this gap by presenting and evaluating a healthcare pathway that utilizes an evidence-based, multidisciplinary approach. By demonstrating the real-world application of this protocol, our findings contribute to the literature on optimizing care pathways for patients with trigger finger.

Purpose

Operative treatment, including percutaneous or open release of the A1 pulley, is recommended after two failed corticosteroid injections.¹ An interdisciplinary team approach including primary care, physical therapists, and hand surgeons, has been demonstrated to be effective in the management of trigger finger.⁸ Therefore, the current study outlines an evidence-based protocol that directs patients to conservative management first, with subsequent referral back to a hand surgeon in cases that are refractory to conservative approaches. This protocol was developed to reduce wait times to access appropriate care and provide treatment that optimizes success rates and minimizes recurrence rates. This study aimed to determine the effectiveness of the protocol based on the resolution of symptoms (i.e., pain and triggering) at specific endpoints throughout the protocol and determine correlations between patient characteristics to various endpoints within the protocol. Secondary aims included identifying characteristics of patients for whom surgical referral was required post-conservative management versus those who responded to physical therapy alone or physical therapy with cortisone injection. We also identified patient characteristics which were associated with an increased need for (i) surgical management and (ii) corticosteroid injections.

Methods

All patients re-routed to care at Venture Rehabilitation Sciences Group (VRSG), Saskatoon, Saskatchewan, Canada between August 2018 and January 2023 for trigger finger consultation were included ($n = 72$). The process for the initial diagnosis of trigger finger made

by the general practitioner to warrant a referral to the specialist is unknown and likely varied. The diagnosis of trigger finger was made by the physical therapist based on a complete clinical assessment, with the presence of triggering or locking or a palpable nodule, with or without the presence of pain. There were referrals made from the general practitioner that were ultimately not trigger finger once clinically evaluated by the physical therapist, and those participants were excluded from the study (e.g., Dupuytren's contracture [$n = 2$], tenosynovitis [$n = 3$]). Patients were also excluded if they were funded through the Worker's Compensation Board ($n = 2$).

Participants first received a physical therapy (PT) assessment and three treatment sessions including manual therapy, exercise instruction, and education on trigger finger management. Manual therapy aimed to address joints restricted secondary to tendon and/or sheath contracture.⁹ This included passive accessory and passive physiological mobilizations and passive stretching of the digits to elongate flexor tendon and/or sheath contractures secondary to the nodule.¹⁰ Additionally, deep tendinous frictions and passive soft tissue manipulation of the nodule both distally through the pulley combined with composite extension of the digit and proximally through the pulley combined with composite flexion of the digit were used.^{10,11} Exercise instruction included self-applied deep tendinous frictions, passive lengthening of the flexor apparatus, and active assisted flexion and extension of the affected digits, with self-applied manipulation of the nodule through the respective pulleys.

Patient education was provided regarding the pathology and diagnosis of trigger finger, symptom management, and activity modification guidance, including avoidance of aggravating factors. The treatment plan and protocol were reviewed, and management of symptom recurrence was discussed. Splinting to keep the affected digit in the extended position was recommended using the Oval8 splint when triggering occurred at the A2 or A3 pulley.¹² It was recommended that patients wear the splint 60%–80% of the day. Electrophysical agents were used only when there was evidence of more acute inflammatory nodules. These were applied rarely, and only on days where this was necessary, but not following a set protocol.

If the patient continued to have pain and triggering at the third appointment, a referral for corticosteroid injection was considered. A subsequent review with an additional experienced physical therapist took place to determine the response to the injection, and a second injection occurred if the response was positive but did not provide full resolution. If a second injection was unsuccessful, the patient was referred back to the plastic surgeon for surgical consult. A flow diagram of the protocol is demonstrated in [Figure 1](#).

A pre-determined data extraction instrument was used for data collection by a physical therapist (KC) and occupational therapist (JP) who were familiar with the health record system and trained to extract data using an accompanying protocol and guideline document with detailed variable descriptions.¹³ Dual data extraction was first conducted on three participants (4% of all records), with 100% accuracy across extractors. Random checks were completed to ensure ongoing inter-extractor consistency. One extractor (JP) was not educated on the study aims to reduce bias. Scheduled meetings occurred to ensure agreement and discuss any uncertainties.

Descriptive analysis involved frequency calculations (count, percentage, mean, median) of studied variables. Comparisons of patient characteristics and treatment modalities across different sub-groups were examined using Pearson's Chi-square test or alternative (Fisher's Exact test or Likelihood ratio test if the percentage of cells

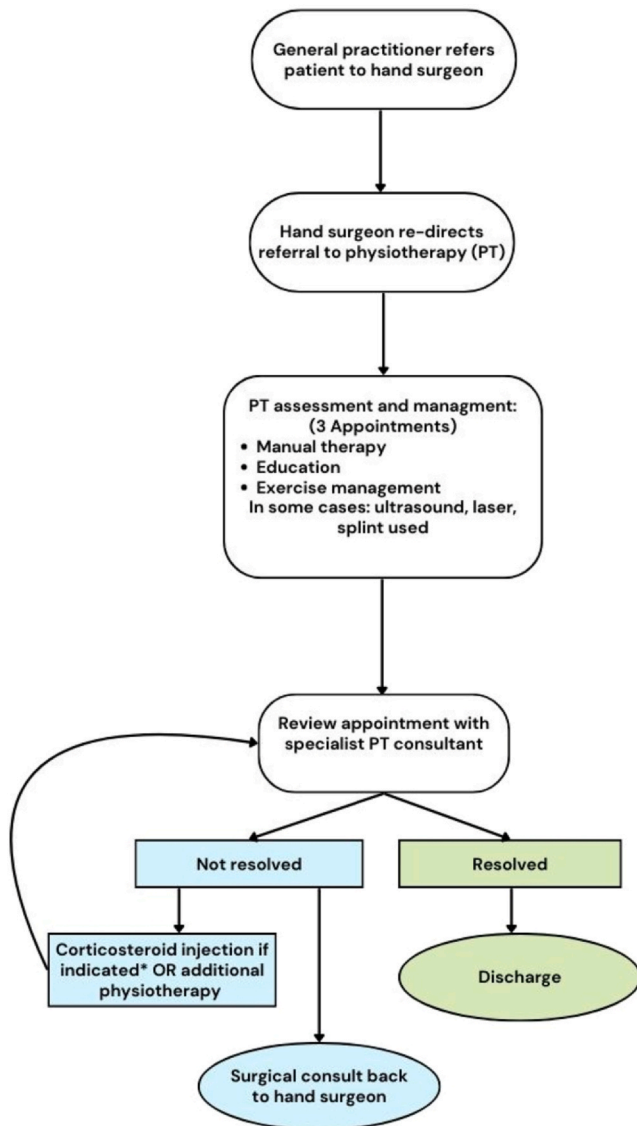


Fig. 1. Collaborative treatment approach to trigger finger protocol.

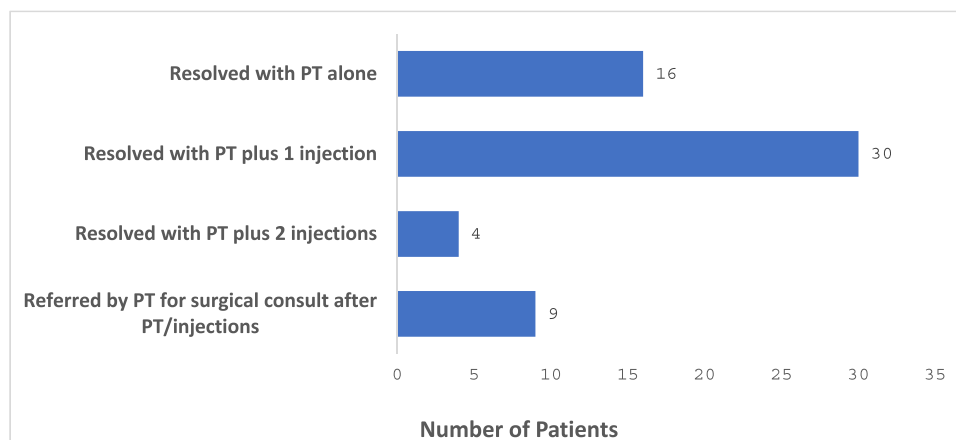
with expected count less than 5 was $> 20\%$) for categorical variables and Kruskal-Wallis test for asymmetric continuous variables. Associations between various patient characteristics and increased need for (i) surgical management and (ii) corticosteroid injection were first explored using Pearson's Chi-square, Fisher's Exact, and Likelihood ratio tests for categorical variables, student t-test and Mann-Whitney U test for continuous variables, followed by logistic regression analysis. Results were considered statistically significant if the two-tailed level of significance was $p < 0.05$. Data analysis was performed using SPSS v28.

Results

Seventy-two patients were included in the study, among which 12 patients (17%) were eligible but did not complete the protocol (i.e., patient self-referred back to surgical consult, lost to follow-up due to patient not attending treatment with no reason provided, patient denied care due to living outside of the urban center or participant unwilling to pay for private physical therapy, and referred to physical therapy elsewhere). Twenty-two percent of the patients ($n = 16$) were resolved with PT alone, 48.5% ($n = 35$) were resolved with 1–2 injections and 12.5% ($n = 9$) were referred back for surgical consult (Fig. 2).

Patient male-to-female ratio was 40:60 and the median age was 62.0 years (IQR: 57.0–68.0 years). Patients' three most frequently reported occupations were retired/non-workers 41.4% ($n = 29$), management/office/sedentary technical 12.9% ($n = 9$), and manual labor/construction 11.4% ($n = 8$). The median time from patient referral from plastic surgery to their first PT appointment was 24.0 days (IQR: 18.3–32.0) (Table 1).

Most patients were right-handed, 90.3% ($n = 65$), and the patient's dominant hand was affected in 56.9% ($n = 41$) of cases. The prevalence of trigger finger was highest in the middle finger 41.7% ($n = 30$) and the A1 pulley was affected in all patients 100% ($n = 72$). The median number of digits involved was 1.0 (IQR: 1.0–1.0). In 81.9% ($n = 59$) of trigger finger presentations, the etiology was both mechanical and inflammatory in nature. Forty seven percent of patients ($n = 33$) had trigger finger symptoms for 6 months or more. Finger triggering was appreciated in 75.0% ($n = 54$) of patients and 20.8% ($n = 15$) of patients had a locking of the joint in extension or flexion with subsequent unlocking with passive movement in the other direction. Reported co-morbidities included diabetes mellitus 19.4% ($n = 14$), carpal tunnel syndrome 16.7% ($n = 12$), and rheumatoid arthritis 1.4% ($n = 1$).



PT: Physical Therapy

Fig. 2. Patient outcome measures for patients who completed the protocol. PT = physical therapy.

Table 1
Patient characteristics (n = 72)

Variable	n (%)
Sex	72
Male	29 (40.3)
Female	43 (59.7)
Age (y)	72
Mean (SD)	61.3 (12.5)
Median [IQR]	62.0 [57.0–68.0]
Occupation	70
Manual labor/Construction	8 (11.4)
Healthcare	5 (7.1)
Education	4 (5.7)
Art/Creative	2 (2.9)
Management/Office/Sedentary technical	9 (12.9)
Retail/Sales	4 (5.7)
Service Industry	6 (8.6)
Agriculture	3 (4.3)
Retired/Non-worker	29 (41.4)
Time from referral to first PT appointment (d)	72
Mean (SD)	26.5 (13.2)
Median [IQR]	24.0 [18.3–32.0]
Handedness	72
Right	65 (90.3)
Left	5 (6.9)
Ambidextrous	2 (2.8)
Dominant hand affected	72
Yes	41 (56.9)
No	18 (25.0)
Bilateral	13 (18.1)
Location (multiple locations allowed)	72
Primary finger involved – Thumb	13 (18.1)
Primary finger involved – Index	10 (13.9)
Primary finger involved – Middle	30 (41.7)
Primary finger involved – Ring	22 (30.6)
Primary finger involved – Small	7 (9.7)
A1 pulley	72 (100.0)
A2 pulley	3 (4.2)
A3 pulley	3 (4.2)
Number of digits involved (1–10 digits)	72
Mean (SD)	1.3 (0.6)
Median [IQR]	1.0 [1.0–1.0]
Etiology	72
Mechanical	12 (16.7)
Inflammatory	1 (1.4)
Both	59 (81.9)
Patient symptom – pain	72
Yes	70 (97.2)
No	2 (2.8)
Pain (VAS at worst)	72
Mean (SD)	4.3 (2.5)
Median [IQR]	4.0 [2.0–7.0]
Range of Motion (ROM)	72
Full	19 (26.4)
Restricted active/full passive	7 (9.7)
Restricted active and passive	40 (55.6)
Other	6 (8.3)
Chronicity of symptoms	71
≤1 mo	3 (4.2)
1 – ≤2 mo	9 (12.7)
2 – ≤3 mo	9 (12.7)
3 – ≤6 mo	17 (23.9)
> 6 mo	33 (46.5)
Amount of triggering	72
Normal	0 (0.0)
A painful palpable nodule	1 (1.4)
Triggering	54 (75.0)
Joint locks into flexion and unlocked with passive joint extension	15 (20.8)
Joint remains locked in a flexed position	2 (2.8)
Rheumatoid arthritis	72
Yes	1 (1.4)
Not reported	71 (98.6)
Diabetes	72
Yes	14 (19.4)
Not reported	58 (80.6)
Carpal tunnel syndrome	72
Yes	12 (16.7)
Not reported	60 (83.3)
Prior cortisone injection to triggering finger	72
Yes	9 (12.5)
Not reported	63 (87.5)

Table 1 (continued)

Variable	n (%)
Documented recurrence	72
Yes	5 (6.9)
Not reported	67 (93.1)

SD = standard deviation; IQR = interquartile range; PT = physical therapy; VAS = visual analogue scale.

Four patients referred to VRSG did not present to the clinic for assessment. Of the 68 patients who were assessed at VRSG, the median number of appointments was 3.0 (IQR: 3.0–3.8). Apart from physical therapy and corticosteroid injections, treatment modalities used included orthosis 17.2% ($n = 11$), ultrasound 7.8% ($n = 5$), and laser 3.1% ($n = 2$) based on individual needs.

Sub-group comparisons revealed no significant differences in patient characteristics and treatment modalities across patients who resolved with physical therapy alone, physical therapy plus 1–2 injections, or in cases referred back for surgical consults (all p -values > 0.05) (Table 2).

Logistic regression analyses revealed similar results and indicated no statistically significant associations between patient characteristics and the two outcomes, except for the borderline significance obtained for sex (OR = 5.0, 95% CI: 0.97–19.7; $p = 0.06$) and trigger finger in middle finger (OR = 4.0; 95% CI: 0.89–18.0; $p = 0.07$) (Table 3). Appendix D summarizes the rates of (i) increased need for surgical management and (ii) corticosteroid injection by patient characteristics. Increased need for surgical management was higher for males than females (27.3% vs. 7.9%) and for patients with trigger finger in middle finger than those without (26.1% vs. 8.1%). However, these differences only reached borderline significance ($p = 0.06$ and 0.07, respectively). There were no statistically significant differences in the rates of increased need for surgical management and corticosteroid injection regarding other characteristics (p -values > 0.05).

Discussion

This study aimed to evaluate the outcomes of an interdisciplinary trigger finger protocol. Patients referred for surgical consult were re-directed to conservative management first, starting with physical therapy, followed by corticosteroid injections if indicated, and ultimately referred back for surgical consultation only if refractory to conservative approaches. Our findings demonstrate that the majority of patients improved with conservative approaches (70.8%), and a small proportion required surgical consultation (12.5%). This protocol facilitates timely access to appropriate, guideline-concordant care.

Across Canada, long wait times between primary care physicians' referrals to specialist appointments remain a leading barrier to timely care.^{3,4,14,15} In the current study, the median time to the first appointment with a physical therapist after a referral from a hand surgeon was 24.0 days (IQR: 18.3–32.0) with delays in initiating PT often based on patient preferences. In contrast, the average time from referral to the first appointment with a hand surgeon in our study location is upwards of 12 months.⁵ In Australia, a previous study by O'Brien et al., reported that patients with common hand conditions including trigger finger, carpal tunnel syndrome, and de Quervain's tenosynovitis waited 14.3 (SD 17.5) days on average for their first appointment with a hand therapist; similar to our study, the average wait time to be seen by a specialist was much longer, at 89.1 days (SD 22.5).¹⁶ Previous research has found that the majority of patients with non-urgent musculoskeletal conditions seen by physical therapists as a first-line management option were appropriately assessed and managed, improving access to care with more efficient use of health care resources.^{17,18}

Table 2
Patient characteristics by sub-group based on protocol endpoints based on the resolution of symptoms ($n = 60$)

Variable	Sub-group ($n = 60$)			p-value
	Resolved with PT alone $n = 16$ n (%)	Resolved with PT plus 1-2 injections $n = 35$ (%)	Referred back for surgical consult $n = 9$ (%)	
Sex	16	35	9	0.13
Male	5 (31.3)	11 (31.4)	6 (66.7)	
Female	11 (68.7)	24 (68.6)	3 (33.3)	
Age (y)	16	35	9	
Mean (SD)	62.9 (12.8)	60.6 (11.1)	58.2 (12.1)	
Median [IQR]	65.5 [58.5–71.0]	60.0 [54.0–68.0]	63.0 [54.0–66.0]	0.44
Occupation	16	33	9	0.22
Manual labor/Construction	2 (12.5)	3 (9.1)	1 (11.1)	
Healthcare	2 (12.5)	1 (3.0)	2 (22.2)	
Education	2 (12.5)	2 (6.1)	0 (0.0)	
Art/Creative	0 (0.0)	0 (0.0)	0 (0.0)	
Management/Office/Sedentary technical	3 (18.8)	5 (15.2)	0 (0.0)	
Retail/Sales	0 (0.0)	2 (6.1)	2 (22.2)	
Service Industry	0 (0.0)	4 (12.1)	0 (0.0)	
Agriculture	1 (6.3)	1 (3.0)	0 (0.0)	
Retired/Non-worker	6 (37.5)	15 (45.5)	4 (44.4)	
Time from referral to first PT appointment (d)	16	35	9	
Mean (SD)	22.8 (11.6)	27.4 (13.5)	24.8 (11.9)	
Median [IQR]	21.0 [14.3–27.0]	26.0 [18.0–34.0]	23.0 [13.5–33.5]	0.59
Handedness	16	35	9	0.36
Right	15 (93.8)	31 (88.6)	9 (100.0)	
Left	1 (6.3)	4 (11.4)	0 (0.0)	
Dominant hand affected	16	35	9	0.23
Yes	11 (68.8)	20 (57.1)	4 (44.4)	
No	2 (12.5)	12 (34.3)	2 (22.2)	
Bilateral	3 (18.8)	3 (8.6)	3 (33.3)	
Location:	16	35	9	
Primary finger involved – Thumb	4 (25.0)	6 (17.1)	1 (11.1)	0.66
Primary finger involved – Index	4 (25.0)	2 (5.7)	3 (33.3)	0.05
Primary finger involved – Middle	3 (18.8)	14 (40.0)	6 (66.7)	0.06
Primary finger involved – Ring	5 (31.3)	11 (31.4)	2 (22.2)	0.85
Primary finger involved – Small	2 (12.5)	2 (5.7)	0 (0.0)	0.37
A1 pulley	16 (100.0)	35 (100.0)	9 (100.0)	n/a
A2 pulley	0 (0.0)	2 (5.7)	0 (0.0)	0.33
A3 pulley	1 (6.3)	1 (2.9)	1 (11.1)	0.61
Number of digits involved	16	35	9	
Mean (SD)	1.3 (0.4)	1.2 (0.5)	1.6 (0.9)	
Median [IQR]	1.0 [1.0–1.8]	1.0 [1.0–1.0]	1.0 [1.0–2.5]	0.32
Etiology	16	35	9	0.85 ^a
Mechanical	3 (18.8)	6 (17.1)	1 (11.1)	
Inflammatory	0 (0.0)	1 (2.9)	0 (0.0)	
Both	13 (81.3)	28 (80.0)	8 (88.9)	
Patient symptom – pain	16	35	9	0.33
Yes	16 (100.0)	33 (94.3)	9 (100.0)	
No	0 (0.0)	2 (5.7)	0 (0.0)	
Pain (VAS at worst)	16	35	9	
Mean (SD)	4.0 (2.8)	4.6 (2.4)	3.7 (1.9)	
Median [IQR]	3.0 [1.3–7.0]	5.0 [3.0–7.0]	3.0 [2.5–5.0]	0.45
ROM	16	35	9	
Full	4 (25.0)	9 (25.7)	4 (44.4)	
Restricted active/full passive	1 (6.3)	2 (5.7)	1 (11.1)	
Restricted active and passive	10 (62.5)	21 (60.0)	4 (44.4)	
Other	1 (6.3)	3 (8.6)	0 (0.0)	0.82
Chronicity of symptoms	16	35	9	0.57
≤ 1 mo	0 (0.0)	3 (8.6)	0 (0.0)	
1 – ≤ 2 mo	3 (18.8)	3 (8.6)	2 (22.2)	
2 – ≤ 3 mo	2 (12.5)	5 (14.3)	1 (11.1)	
3 – ≤ 6 mo	5 (31.3)	11 (31.4)	1 (11.1)	
> 6 mo	6 (37.5)	13 (37.1)	5 (55.6)	
Amount of triggering	16	35	9	0.44
Normal	0 (0.0)	0 (0.0)	0 (0.0)	
A painful palpable nodule	1 (6.3)	0 (0.0)	0 (0.0)	
Triggering	11 (68.8)	25 (71.4)	7 (77.8)	
Joint locks into flexion and unlocked with passive joint extension	3 (18.8)	10 (28.6)	2 (22.2)	
Joint remains locked in a flexed position	1 (6.3)	0 (0.0)	0 (0.0)	
Rheumatoid arthritis	16	35	9	0.58
Yes	0 (0.0)	1 (2.9)	0 (0.0)	
Not reported	16 (100.0)	34 (97.1)	9 (100.0)	
Diabetes	16	35	9	0.46
Yes	3 (18.8)	5 (14.3)	3 (33.3)	
Not reported	13 (81.3)	30 (85.7)	6 (66.7)	
Carpal tunnel syndrome	16	35	9	0.44
Yes	1 (6.3)	6 (17.1)	2 (22.2)	
Not reported	15 (93.8)	29 (82.9)	7 (77.8)	
Prior corticosteroid injection to triggering finger	16	35	9	0.08
Yes	0 (0.0)	5 (14.3)	2 (22.2)	
Not reported	16 (100.0)	30 (85.7)	7 (77.8)	

(continued on next page)

Table 2 (continued)

Variable	Sub-group (n = 60)			p-value
	Resolved with PT alone n = 16 n (%)	Resolved with PT plus 1-2 injections n = 35 n (%)	Referred back for surgical consult n = 9 n (%)	
Documented recurrence	16	35	9	0.36
Yes	1 (6.3)	4 (11.4)	0 (0.0)	
Not reported	15 (93.8)	31 (88.6)	9 (100.0)	

For categorical variables: Chi-square test was used to compare the differences across 3 groups.

SD = standard deviation; IQR = interquartile range; PT = physical therapy; ROM = range of motion; VAS = visual analogue scale.

^a Likelihood ratio test was used instead of Chi-square test when > 20% of cells have expected count less than 5.

Table 3

Logistic regression analysis to examine the associations between patient characteristics and increased need for surgical management and corticosteroid injection

Variable	Increased need for surgical management ^a (n = 60)		Increased need for corticosteroid injection [†] (n = 51)	
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value
Sex				
Female (ref.)	1.0		1.0	
Male	5.0 (0.97–19.7)	0.06	1.0 (0.28–3.6)	0.99
Age (y)	0.98 (0.92–1.0)	0.46	0.98 (0.93–1.0)	0.51
Time from referral to first PT appointment (d)	0.99 (0.94–1.1)	0.80	1.0 (0.98–1.1)	0.25
Handedness				
Right (ref.)	1.0		1.0	
Left	n/a	n/a	1.9 (0.20–18.9)	0.57
Dominant hand affected				
No (ref.)	1.0		1.0	
Yes	0.90 (0.15–5.5)	0.91	0.30 (0.06–1.6)	0.16
Bilateral	3.5 (0.46–26.6)	0.23	0.17 (0.02–1.5)	0.11
Location:				
Primary finger involved – Thumb				
No (ref.)	1.0		1.0	
Yes	0.51 (0.06–4.6)	0.55	0.62 (0.15–2.6)	0.51
Primary finger involved – Index				
No (ref.)	1.0		1.0	
Yes	3.8 (0.74–19.1)	0.11	0.18 (0.03–1.1)	0.07
Primary finger involved – Middle				
No (ref.)	1.0		1.0	
Yes	4.0 (0.89–18.0)	0.07	2.9 (0.69–12.0)	0.15
Primary finger involved – Ring				
No (ref.)	1.0		1.0	
Yes	0.63 (0.12–3.4)	0.58	1.0 (0.28–3.6)	0.99
Primary finger involved – Small				
No (ref.)	1.0		1.0	
Yes	n/a	n/a	0.42 (0.05–3.3)	0.41
A3 pulley				
No (ref.)	1.0		1.0	
Yes	3.1 (0.25–37.8)	0.38	0.44 (0.03–7.5)	0.57
Number of digits involved	2.6 (0.88–7.7)	0.08	0.69 (0.19–2.5)	0.56
Etiology				
Mechanical (ref.)	1.0		1.0	
Inflammatory	n/a	n/a	n/a	n/a
Both	1.8 (0.19–15.9)	0.62	1.1 (0.23–5.0)	0.93
Pain (VAS at worst)	0.88 (0.65–1.2)	0.39	1.1 (0.87–1.4)	0.41
ROM				
Full (ref.)	1.0		1.0	
Restricted active/full passive	1.1 (0.09–13.5)	0.95	0.89 (0.06–12.9)	0.93
Restricted active and passive	0.42 (0.09–1.9)	0.27	0.93 (0.23–3.8)	0.92
Other	n/a	n/a	1.3 (0.10–17.1)	0.83
Diabetes				
Not reported (ref.)	1.0		1.0	
Yes	2.7 (0.56–13.0)	0.22	0.72 (0.15–3.5)	0.69
Carpal tunnel syndrome				
Not reported (ref.)	1.0		1.0	
Yes	1.8 (0.31–10.5)	0.52	3.1 (0.34–28.2)	0.32
Prior cortisone injection to triggering finger				
Not reported (ref.)	1.0		1.0	
Yes	2.6 (0.43–16.3)	0.30	n/a	n/a
Documented recurrence				
Not reported (ref.)	1.0		1.0	
Yes	n/a	n/a	1.9 (0.20–18.9)	0.57

95% CI = 95% Confidence Interval; Ref. = reference category; PT = physical therapy; ROM = range of motion; VAS = visual analogue scale.

Univariate logistic regression analysis was performed for all patient characteristic variables. However, only variables with valid estimates were included in the Table. For some variables, parameter estimates could not be calculated due to insufficient sample size.

^a The sample included patients resolved with PT alone and resolved with 1–2 injections (i.e., no increased need for surgical management) and those referred back for surgical consult (i.e., increased need for surgical management).

[†] The sample included patients resolved with PT alone (i.e., no increased need for corticosteroid injection) and those resolved with 1–2 injections (i.e., increased need for corticosteroid injection).

Of the 72 patients referred to PT for conservative management in our study, only 12.5% of the patients were referred back to a hand surgeon for operative consultation. In addition, 70.8% of patients' trigger finger symptoms were resolved with physical therapy alone or PT plus one or two cortisone injections, delaying or removing the need for surgery. Therefore, we can infer that most patients in the current study received effective and timely care by being seen by PT as a first-line management option, rather than waiting for a hand surgeon's assessment. It is common for lengthy wait times for specialist consults.^{4,14} With the protocol demonstrated in this study, patients have ample time to participate in a course of conservative management before seeing a specialist. The interdisciplinary care protocol effectively guides patients through an escalation of care including corticosteroid injections and ultimately surgical consult if conservative management fails. This approach efficiently moves the patient through the system facilitating access to appropriate treatment based on individual patient responses, while also improving tissue extensibility and the size of the nodule through conservative treatments. Given the current challenges regarding access and wait times to see specialists impacting many healthcare systems across the world,¹⁹ it is essential to implement ways in which allied healthcare professionals may be better utilized to offer patients safe and timely care.^{16,17,20}

To better inform future models of care, we aimed to determine predictive characteristics for patients requiring care beyond PT; however, there were no predictive characteristics for patients requiring corticosteroid injections or surgical management in our study sample. Two patient characteristics approached significance, with male sex and involvement of the third digit being more likely to require surgical management. This is in keeping with previous studies in the literature that have demonstrated male sex²¹ and index, ring, or middle finger involvement^{21–23} to be predictors of trigger finger recurrence following corticosteroid injection and progression to surgical release.

Multidisciplinary care for patients with trigger finger is well-reported in the literature as it provides a means to effective and efficient treatment.^{8,16,24} A previously completed European Delphi consensus strategy including hand surgeons, hand therapists, and physical medicine and rehabilitation physicians reached a consensus on a treatment guideline for trigger finger.²⁴ Conservative management options outlined in our protocol were agreed upon by both the physical therapists and a plastic surgeon. These included manual therapy, patient education, exercise management, as well as the occasional use of ultrasound, laser, or orthoses, and ultimately corticosteroid injections. The benefits of referring patients with trigger finger to physical therapists first include timely treatment, education on self-management strategies, improvement in soft tissue extensibility, and navigation of the health system to improve the efficiency of flow when conservative management fails. In our protocol, all patients first underwent manual therapy, education, and exercise management over an average of 3.1 appointments. Manual therapy including stretching and joint mobilization, increases the cross-

sectional luminal area of the A1 pulley leading to an expected decrease in friction between the tendon and pulley.^{11,25,26} Adjunctive treatments including ultrasound (extracorporeal shock wave therapy), laser, and orthoses have also demonstrated benefits in conservative management of trigger finger.^{27–29} If patients continued to have pain and triggering, after three appointments, an assessment by a specialist PT consultant was conducted and if indicated, patients were given the option to proceed with corticosteroid injection. Corticosteroid injection administered into the A1 pulley is a low-morbidity intervention that reduces symptoms of trigger finger through mechanisms including reducing swelling at the A1 pulley, decreasing the synthesis of collagen type I proteoglycans, and reducing tenocyte proliferation.^{1,30} Within a 6-month follow-up period, a previous study reported the success rate after a single corticosteroid injection to be 57%, increasing to 86% after a second corticosteroid injection.³¹ Currently, there is no universally agreed upon algorithm for the use of corticosteroid injections and the treatment of trigger finger; however, based on the current literature, our protocol deemed patients as surgical candidates once two corticosteroid injections failed to resolve symptoms of pain and triggering.^{1,31,32} In these cases, the patient was referred back to the plastic surgeon for surgical consultation. Ultimately, this protocol demonstrates an approach to timely access and appropriate, guideline-concordant care.^{1,16,33,34}

The strengths of this study lie in the examination of real-world clinical practices and outcomes using retrospective chart data. This approach provides a valuable perspective by leveraging existing records, thus reflecting actual clinical scenarios and patient experiences. The research team has strong clinical experience in physical therapy, occupational therapy, and hand surgery, ensuring a clinically oriented approach to the study outcomes.

Limitations of the current study include a relatively small sample size and the retrospective nature of the study. The small study sample may have limited our chances to observe significant results. However, our findings are in line with those from retrospective studies on trigger finger previously published in the literature.² Regarding the protocol exemplified in the study, the pattern of referral and providers involved will differ based on the regulations and processes of respective healthcare systems. However, the concepts and interdisciplinary approach highlighted in this study may be applied broadly despite these differences.

Conclusion

The interdisciplinary care protocol utilized in the study center facilitates guideline-concordant care for trigger finger, including timely access to conservative management as a first-line treatment option, with subsequent access to surgical consult if conservative management fails. Future research could include multiple study centers to increase sample size for determining patient characteristics predictive of treatment needs.

Appendix A

Patient characteristics by sub-group based on protocol endpoints based on the resolution of symptoms – Male sub-sample

Variable	Sub-group (n = 22)			p-value
	Resolved with PT alone n = 5 n (%)	Resolved with PT plus 1-2 injections n = 11 n (%)	Referred back for surgical consult n = 6 n (%)	
Age (y)	5	11	6	
Mean (SD)	63.8 (12.3)	57.4 (9.3)	57.2 (14.0)	
Median [IQR]	63.0 [53.0–75.0]	59.0 [52.0–60.0]	63.0 [48.8–65.0]	0.36
Occupation	5	10	6	0.49
Manual labor/Construction	2 (40.0%)	2 (20.0%)	1 (16.7%)	
Healthcare	0 (0.0%)	0 (0.0%)	1 (16.7%)	
Education	1 (20.0%)	0 (0.0%)	0 (0.0%)	
Art/Creative	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Management/Office/Sedentary technical	1 (20.0%)	2 (20.0%)	0 (0.0%)	
Retail/Sales	0 (0.0%)	1 (10.0%)	1 (16.7%)	
Service Industry	0 (0.0%)	1 (10.0%)	0 (0.0%)	
Agriculture	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Retired/Non-worker	1 (20.0%)	4 (40.0%)	3 (50.0%)	
Time from referral to first PT appointment (d)	5	11	6	
Mean (SD)	22.0 (10.0)	26.6 (8.6)	27.7 (13.7)	
Median [IQR]	21.0 [14.5–30.0]	26.0 [24.0–32.0]	30.0 [12.5–38.0]	0.47
Handedness	5	11	6	0.35
Right	4 (80.0%)	9 (81.8%)	6 (100.0%)	
Left	1 (20.0%)	2 (18.2%)	0 (0.0%)	
Dominant hand affectedd	5	11	6	0.28
Yes	4 (80.0%)	8 (72.7%)	4 (66.7%)	
No	0 (0.0%)	3 (27.3%)	1 (16.7%)	
Bilateral	1 (20.0%)	0 (0.0%)	1 (16.7%)	
Location:	5	11	6	
Primary finger involved – Thumb	1 (20.0%)	1 (9.1%)	0 (0.0%)	0.43
Primary finger involved – Index	1 (20.0%)	0 (0.0%)	2 (33.3%)	0.09
Primary finger involved – Middle	1 (20.0%)	6 (54.5%)	4 (66.7%)	0.26
Primary finger involved – Ring	3 (60.0%)	3 (27.3%)	1 (16.7%)	0.29
Primary finger involved – Small	1 (20.0%)	0 (0.0%)	0 (0.0%)	0.21
A1 pulley	5 (100.0%)	11 (100.0%)	6 (100.0%)	n/a
A2 pulley	0 (0.0%)	0 (0.0%)	0 (0.0%)	n/a
A3 pulley	1 (20.0%)	0 (0.0%)	1 (16.7%)	0.22
Number of digits involved	5	11	6	
Mean (SD)	1.4 (0.5)	1.2 (0.6)	1.3 (0.8)	
Median [IQR]	1.0 [1.0–2.0]	1.0 [1.0–1.0]	1.0 [1.0–1.5]	0.47
Etiology	5	11	6	0.20
Mechanical	3 (60.0%)	2 (18.2%)	1 (16.7%)	
Inflammatory	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Both	2 (40.0%)	9 (81.8%)	5 (83.3%)	
Patient symptom – pain	5	11	6	0.23
Yes	5 (100.0%)	9 (81.8%)	6 (100.0%)	
No	0 (0.0%)	2 (18.2%)	0 (0.0%)	
Pain (VAS at worst)	5	11	6	
Mean (SD)	3.2 (3.2)	3.9 (2.7)	3.8 (2.3)	
Median [IQR]	1.0 [1.0–6.5]	4.0 [2.0–7.0]	3.5 [1.8–6.3]	0.86
ROM	5	11	6	0.81
Full	2 (40.0%)	4 (36.4%)	3 (50.0%)	
Restricted active/full passive	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Restricted active and passive	3 (60.0%)	6 (54.5%)	3 (50.0%)	
Other	0 (0.0%)	1 (9.1%)	0 (0.0%)	
Chronicity of symptoms	5	11	6	0.19
≤1 mo	0 (0.0%)	2 (18.2%)	0 (0.0%)	
1 – ≤2 mo	0 (0.0%)	1 (9.1%)	2 (33.3%)	
2 – ≤3 mo	0 (0.0%)	2 (18.2%)	0 (0.0%)	
3 – ≤6 mo	2 (40.0%)	4 (36.4%)	1 (16.7%)	
> 6 mo	3 (60.0%)	2 (18.2%)	3 (50.0%)	
Amount of triggering	5	11	6	0.17
Normal	0 (0.0%)	0 (0.0%)	0 (0.0%)	
A painful palpable nodule	1 (20.0%)	0 (0.0%)	0 (0.0%)	
Triggering	3 (60.0%)	7 (63.6%)	4 (66.7%)	
Joint locks into flexion and unlocked with passive joint extension	0 (0.0%)	4 (36.4%)	2 (33.3%)	
Joint remains locked in a flexed position	1 (20.0%)	0 (0.0%)	0 (0.0%)	
Rheumatoid arthritis	5	11	6	n/a
Yes	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Not reported	5 (100.0%)	11 (100.0%)	6 (100.0%)	
Diabetes	5	11	6	0.81
Yes	1 (20.0%)	1 (9.1%)	1 (16.7%)	
Not reported	4 (80.0%)	10 (90.9%)	5 (83.3%)	

Carpal tunnel syndrome	5	11	6	0.26
Yes	0 (0.0%)	0 (0.0%)	1 (16.7%)	
Not reported	5 (100.0%)	11 (100.0%)	5 (83.3%)	
Prior corticosteroid injection to triggering finger	5	11	6	0.26
Yes	0 (0.0%)	0 (0.0%)	1 (16.7%)	
Not reported	5 (100.0%)	11 (100.0%)	5 (83.3%)	
Documented recurrence	5	11	6	n/a
Yes	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Not reported	5 (100.0%)	11 (100.0%)	6 (100.0%)	

SD = standard deviation; IQR = interquartile range; PT = physical therapy; ROM = range of motion; VAS = visual analogue scale.

Appendix B

Patient characteristics by sub-group based on protocol endpoints based on the resolution of symptoms – Female sub-sample

Variable	Sub-group (n = 38)			p-value
	Resolved with PT alone n = 11 n (%)	Resolved with PT plus 1-2 injections n = 24 n (%)	Referred back for surgical consult n = 3 n (%)	
Age (y)	11	24	3	
Mean (SD)	62.6 (13.6)	62.1 (11.7)	60.3 (9.5)	
Median [IQR]	66.0 [58.0–68.0]	62.0 [55.0–70.3]	57.0 [53.0–n/a]	0.75
Occupation	11	23	3	0.63
Manual labor/Construction	0 (0.0%)	1 (4.3%)	0 (0.0%)	
Healthcare	2 (18.2%)	1 (4.3%)	1 (33.3%)	
Education	1 (9.1%)	2 (8.7%)	0 (0.0%)	
Art/Creative	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Management/Office/Sedentary technical	2 (18.2%)	3 (13.0%)	0 (0.0%)	
Retail/Sales	0 (0.0%)	1 (4.3%)	1 (33.3%)	
Service Industry	0 (0.0%)	3 (13.0%)	0 (0.0%)	
Agriculture	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Retired/Non-worker	5 (45.5%)	11 (47.8%)	1 (33.3%)	
Time from referral to first PT appointment (d)	11	24	3	
Mean (SD)	23.2 (12.6)	27.8 (15.4)	19.0 (4.6)	
Median [IQR]	21.0 [14.0–27.0]	20.5 [15.8–34.8]	20.0 [14.0–n/a]	0.66
Handedness	11	24	3	0.39
Right	11 (100.0%)	22 (91.7%)	3 (100.0%)	
Left	0 (0.0%)	2 (8.3%)	0 (0.0%)	
Dominant hand affected	11	24	3	0.13
Yes	7 (63.6%)	12 (50.0%)	0 (0.0%)	
No	2 (18.2%)	9 (37.5%)	1 (33.3%)	
Bilateral	2 (18.2%)	3 (12.5%)	2 (66.7%)	
Location:	11	24	3	
Primary finger involved – Thumb	3 (27.3%)	5 (20.8%)	1 (33.3%)	0.85
Primary finger involved – Index	3 (27.3%)	2 (8.3%)	1 (33.3%)	0.26
Primary finger involved – Middle	2 (18.2%)	8 (33.3%)	2 (66.7%)	0.27
Primary finger involved – Ring	2 (18.2%)	8 (33.3%)	1 (33.3%)	0.63
Primary finger involved – Small	1 (9.1%)	2 (8.3%)	0 (0.0%)	0.77
A1 pulley	11 (100.0%)	24 (100.0%)	3 (100.0%)	n/a
A2 pulley	0 (0.0%)	2 (8.3%)	0 (0.0%)	0.39
A3 pulley	0 (0.0%)	1 (4.2%)	0 (0.0%)	0.63
Number of digits involved	11	24	3	
Mean (SD)	1.2 (0.4)	1.2 (0.4)	2.0 (1.0)	
Median [IQR]	1.0 [1.0–1.0]	1.0 [1.0–1.0]	2.0 [1.0–n/a]	0.09
Etiology	11	24	3	0.28
Mechanical	0 (0.0%)	4 (16.7%)	0 (0.0%)	
Inflammatory	0 (0.0%)	1 (4.2%)	0 (0.0%)	
Both	11 (100.0%)	19 (79.2%)	3 (100.0%)	
Patient symptom – pain	11	24	3	n/a
Yes	11 (100.0%)	24 (100.0%)	3 (100.0%)	
No	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Pain (VAS at worst)	11	24	3	
Mean (SD)	4.4 (2.7)	5.0 (2.3)	3.3 (0.6)	
Median [IQR]	4.0 [2.0–7.0]	5.0 [3.0–7.0]	3.0 [3.0–n/a]	0.47
ROM	11	24	3	0.89
Full	2 (18.2%)	5 (20.8%)	1 (33.3%)	
Restricted active/full passive	1 (9.1%)	2 (8.3%)	1 (33.3%)	
Restricted active & passive	7 (63.6%)	15 (62.5%)	1 (33.3%)	
Other	1 (9.1%)	2 (8.3%)	0 (0.0%)	
Chronicity of symptoms	11	24	3	0.50
≤1 mo	0 (0.0%)	1 (4.2%)	0 (0.0%)	
1 – ≤2 mo	3 (27.3%)	2 (8.3%)	0 (0.0%)	
2 – ≤3 mo	2 (18.2%)	3 (12.5%)	1 (33.3%)	
3 – ≤6 mo	3 (27.3%)	7 (29.2%)	0 (0.0%)	
> 6 mo	3 (27.3%)	11 (45.8%)	2 (66.7%)	
Amount of triggering	11	24	3	0.42
Normal	0 (0.0%)	0 (0.0%)	0 (0.0%)	
A painful palpable nodule	0 (0.0%)	0 (0.0%)	0 (0.0%)	

Triggering	8 (72.7%)	18 (75.0%)	3 (100.0%)	
Joint locks into flexion and unlocked with passive joint extension	3 (27.3%)	6 (25.0%)	0 (0.0%)	
Joint remains locked in a flexed position	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Rheumatoid arthritis	11	24	3	0.63
Yes	0 (0.0%)	1 (4.2%)	0 (0.0%)	
Not reported	11 (100.0%)	23 (95.8%)	3 (100.0%)	
Diabetes	11	24	3	0.20
Yes	2 (18.2%)	4 (16.7%)	2 (66.7%)	
Not reported	9 (81.8%)	20 (83.3%)	1 (33.3%)	
Carpal tunnel syndrome	11	24	3	0.45
Yes	1 (9.1%)	6 (25.0%)	1 (33.3%)	
Not reported	10 (90.9%)	18 (75.0%)	2 (66.7%)	
Prior corticosteroid injection to triggering finger	11	24	2	0.09
Yes	0 (0.0%)	5 (20.8%)	1 (33.3%)	
Not reported	11 (100.0%)	19 (79.2%)	2 (66.7%)	
Documented recurrence	11	24	3	0.53
Yes	1 (9.1%)	4 (16.7%)	0 (0.0%)	
Not reported	10 (90.9%)	20 (83.3%)	3 (100.0%)	

SD = standard deviation; IQR = interquartile range; PT = physical therapy; ROM = range of motion; VAS = visual analogue scale.

Appendix C

Mean difference across the three sub-groups

Variable	Resolved with PT alone vs. resolved with PT plus 1-2 injections	Resolved with PT alone vs. referred back for surgical consult	Resolved with PT plus 1-2 injection vs. referred back for surgical consult
<i>Overall sample</i>	<i>n</i> = 51	<i>n</i> = 25	<i>n</i> = 44
Age (y)	51	25	44
Mean difference (95% CI)	2.3 (-4.7 - 9.4)	4.7 (-6.1 - 15.5)	2.4 (-6.1 - 10.9)
Time from referral to first PT appointment (d)	51	25	44
Mean difference (95% CI)	-4.6 (-12.5 - 3.3)	-2.0 (-12.0 - 8.1)	2.6 (-7.4 - 12.6)
Number of digits involved	51	25	44
Mean difference (95% CI)	0.1 (-0.2 - 0.4)	-0.3 (-0.9 - 0.2)	-0.4 (-1.1 - 0.3)
Pain (VAS at worst)	51	25	44
Mean difference (95% CI)	-0.6 (-2.2 - 0.9)	0.3 (-1.9 - 2.5)	1.0 (-0.8 - 2.7)
<i>Male sub-group</i>	<i>n</i> = 16	<i>n</i> = 11	<i>n</i> = 17
Age (y)	16	11	17
Mean difference (95% CI)	6.4 (-5.4 - 18.3)	6.6 (-11.5 - 24.8)	0.2 (-11.8 - 12.2)
Time from referral to first PT appointment (d)	16	11	17
Mean difference (95% CI)	-4.5 (-15.0 - 5.9)	-5.7 (-22.4 - 11.0)	-1.1 (-12.5 - 10.3)
Number of digits involved	16	11	17
Mean difference (95% CI)	0.2 (-0.5 - 0.9)	0.1 (-0.9 - 1.0)	-0.2 (-0.9 - 0.6)
Pain (VAS at worst)	16	11	17
Mean difference (95% CI)	-0.7 (-4.0 - 2.6)	-0.6 (-4.4 - 3.1)	0.1 (-2.7 - 2.9)
<i>Female sub-group</i>	<i>n</i> = 35	<i>n</i> = 14	<i>n</i> = 27
Age (y)	35	14	27
Mean difference (95% CI)	0.4 (-8.7 - 9.5)	2.2 (-16.2 - 20.7)	1.8 (-12.8 - 16.3)
Time from referral to first PT appointment (d)	35	14	27
Mean difference (95% CI)	5.3 (-15.5 - 6.2)	4.2 (-12.4 - 20.8)	8.8 (-10.0 - 27.5)
Number of digits involved	35	14	27
Mean difference (95% CI)	0.02 (-0.3 - 0.3)	-0.8 (-1.6 - 0.04)	-8.3 (-3.3 - 1.6)
Pain (VAS at worst)	35	14	27
Mean difference (95% CI)	-0.6 (-2.4 - 1.2)	1.0 (-0.9 - 3.0)	1.6 (-1.1 - 4.4)

95% CI = 95% Confidence Interval; PT = physical therapy; VAS = visual analogue scale.

Positive difference indicated former group had higher mean score than the latter group while negative difference indicated former group had lower mean score than the latter group for each pairwise comparison.

For example, mean difference in age between the two groups "Resolved with PT alone" and "Resolved with PT plus 1-2 injections" = 2.3 years indicating that patients in the "Resolved with PT alone" group on average were 2.3 years older than those in the "Resolved with PT plus 1-2 injections" group. We are 95% confident that the true mean difference in age lie in the range between -4.7 to 9.4 years. Since this 95% CI included the Null value of zero, we can say that mean age of patients was not significantly different between these two groups.

Same explanation for other continuous variables in the table.

Appendix D

Associations between various patient characteristics and increased need for surgical management and corticosteroid injection

Variable	Increased need for surgical management*			Increased need for corticosteroid injection†		
	No (n = 51) n (%)	Yes (n = 9) n (%)	p-value	No (n = 16) n (%)	Yes (n = 35) n (%)	p-value
Sex	51	9	0.06	16	35	0.99
Male	16 (72.7)	6 (27.3)		5 (31.3)	11 (68.7)	
Female	35 (92.1)	3 (7.9)		11 (31.4)	24 (68.6)	
Age (y)	51	9		16	35	
Mean (SD)	61.4 (11.6)	58.2 (12.1)		62.9 (12.8)	60.3 (11.1)	
Median [IQR]	62.0 [58.0–68.0]	63.0 [54.0–66.0]	0.53	65.5 [58.5–71.0]	60.0 [54.0–68.0]	0.29
Occupation	49	9	0.17	16	33	0.40
Manual labor/Construction	5 (83.3)	1 (16.7)		2 (40.0)	3 (60.0)	
Healthcare	3 (60.0)	2 (40.0)		2 (66.7)	1 (33.3)	
Education	4 (100.0)	0 (0.0)		2 (50.0)	2 (50.0)	
Management/Office/Sedentary technical	8 (100.0)	0 (0.0)		3 (37.5)	5 (62.5)	
Retail/Sales	2 (50.0)	2 (50.0)		0 (0.0)	2 (100.0)	
Service Industry	4 (100.0)	0 (0.0)		0 (0.0)	4 (100.0)	
Agriculture	2 (100.0)	0 (0.0)		1 (50.0)	1 (50.0)	
Retired/Non-worker	21 (84.0)	4 (16.0)		6 (28.6)	15 (71.4)	
Time from referral to first PT appointment (d)	51	9		16	35	
Mean (SD)	26.0 (13.0)	24.8 (11.9)		22.8 (11.6)	27.4 (13.5)	
Median [IQR]	24.0 [15.0–33.0]	23.0 [13.5–33.5]	0.84	21.0 [14.3–27.0]	26.0 [18.0–34.0]	0.31
Handedness	51	9	0.99	16	35	0.99
Right	46 (83.6)	9 (16.4)		15 (32.6)	31 (67.4)	
Left	5 (100.0)	0 (0.0)		1 (20.0)	4 (80.0)	
Dominant hand affected	51	9	0.31	16	35	0.19
Yes	31 (88.6)	4 (11.4)		11 (35.5)	20 (64.5)	
No	14 (87.5)	2 (12.5)		2 (14.3)	12 (85.7)	
Bilateral	6 (66.7)	3 (33.3)		3 (50.0)	3 (50.0)	
Location:						
Primary finger involved – Thumb	51	9		16	35	
Yes	10 (90.0)	1 (9.1)	0.99	4 (40.0)	6 (60.0)	0.71
No	41 (83.7)	8 (16.3)		12 (29.3)	29 (70.7)	
Primary finger involved – Index	51	9		16	35	
Yes	6 (66.7)	3 (33.3)	0.13	4 (66.7)	2 (33.3)	0.07
No	45 (88.2)	6 (11.8)		12 (26.7)	33 (73.3)	
Primary finger involved – Middle	51	9		16	35	
Yes	17 (73.9)	6 (26.1)	0.07	3 (17.6)	14 (82.4)	0.14
No	34 (91.9)	3 (8.1)		13 (38.2)	21 (61.8)	
Primary finger involved – Ring	51	9		16	35	
Yes	16 (88.9)	2 (11.1)	0.71	5 (31.3)	11 (68.2)	0.99
No	35 (83.3)	7 (16.7)		11 (31.4)	24 (68.6)	
Primary finger involved – Small	51	9		16	35	
Yes	4 (100.0)	0 (0.0)	0.99	2 (50.0)	2 (50.0)	0.58
No	47 (83.9)	9 (16.1)		14 (29.8)	33 (70.2)	
A1 pulley	51	9		16	35	
Yes	51 (85.0)	9 (15.0)	n/a	16 (31.4)	35 (68.6)	n/a
No	0 (n/a)	0 (n/a)		0 (n/a)	0 (n/a)	
A2 pulley	51	9		16	35	
Yes	2 (100.0)	0 (0.0)	0.99	0 (0.0)	2 (100.0)	0.99
No	49 (84.5)	9 (15.5)		16 (32.7)	33 (67.3)	
A3 pulley	51	9		16	35	
Yes	2 (66.7)	1 (33.3)		1 (50.0)	1 (50.0)	0.53
No	49 (86.0)	8 (14.0)	0.39	15 (30.6)	34 (69.4)	
Number of digits involved	51	9		16	35	
Mean (SD)	1.20 (0.4)	1.6 (0.9)		1.3 (0.4)	1.2 (0.5)	
Median [IQR]	1.0 [1.0–1.0]	1.0 [1.0–2.5]	0.20	1.0 [1.0–1.8]	1.0 [1.0–1.0]	0.39
Etiology	51	9	0.74	16	35	0.68
Mechanical	9 (90.0)	1 (10.0)		3 (33.3)	6 (66.7)	
Inflammatory	1 (100.0)	0 (0.0)		0 (0.0)	1 (100.0)	
Both	41 (83.7)	8 (16.3)		13 (31.7)	28 (68.3)	
Pain	51	9	0.99	16	35	0.99
Yes	49 (84.5)	9 (15.5)		16 (32.7)	33 (67.3)	
Not reported	2 (100.0)	0 (0.0)		0 (0.0)	2 (100.0)	
Pain (VAS at worst)	51	9		16	35	
Mean (SD)	4.4 (2.5)	3.7 (1.9)		4.0 (2.8)	4.6 (2.4)	
Median [IQR]	5.0 [2.0–7.0]	3.0 [2.5–5.0]	0.39	3.0 [1.3–7.0]	5.0 [3.0–7.0]	0.41
ROM	51	9	0.42	16	35	0.99
Full	13 (76.5)	4 (23.5)		4 (30.8)	9 (69.2)	
Restricted active/full passive	3 (75.0)	1 (25.0)		1 (33.3)	2 (66.7)	
Restricted active and passive	31 (88.6)	4 (44.4)		10 (32.3)	21 (67.7)	
Other	4 (100.0)	0 (0.0)		1 (25.0)	3 (75.0)	
Chronicity of symptoms	51	9	0.47	16	35	0.53
≤1 mo	3 (100.0)	0 (0.0)		0 (0.0)	3 (100.0)	
1 – ≤2 mo	6 (75.0)	2 (25.0)		3 (50.0)	3 (50.0)	
2 – ≤3 mo	7 (87.5)	1 (12.5)		2 (28.6)	5 (71.4)	

3 – ≤6 mo	16 (94.1)	1 (5.9)	5 (31.3)	11 (68.8)	
> 6 mo	19 (79.2)	5 (20.8)	6 (31.6)	13 (68.4)	
Amount of triggering	51		0.86	16	0.17
A painful palpable nodule	1 (100.0)	0 (0.0)	1 (100.0)	0 (0.0)	
Triggering	36 (83.7)	7 (16.3)	11 (30.6)	25 (69.4)	
Joint locks into flexion and unlocked with passive joint extension	13 (86.7)	2 (13.3)	3 (23.1)	10 (76.9)	
Joint remains locked in a flexed position	1 (100.0)	0 (0.0)	1 (100.0)	0 (0.0)	
Rheumatoid arthritis	51	9	0.99	16	0.99
Yes	1 (100.0)	0 (0.0)	0 (0.0)	1 (100.0)	
Not reported	50 (84.7)	9 (15.3)	16 (32.0)	34 (68.0)	
Diabetes	51	9	0.35	16	0.69
Yes	8 (72.7)	3 (27.3)	3 (37.5)	5 (62.5)	
Not reported	43 (87.8)	6 (12.2)	13 (30.2)	30 (69.8)	
Carpal tunnel syndrome	51	9	0.61	16	0.41
Yes	7 (77.8)	2 (22.2)	1 (14.3)	6 (85.7)	
Not reported	44 (86.3)	7 (13.7)	15 (34.1)	29 (65.9)	
Prior cortisone injection to triggering finger	51	9	0.28	16	0.17
Yes	5 (71.4)	2 (28.6)	0 (0.0)	5 (100.0)	
Not reported	46 (86.8)	7 (13.2)	16 (34.8)	30 (65.2)	
Documented recurrence	51	9	0.99	16	0.99
Yes	5 (100.0)	0 (0.0)	1 (20.0)	4 (80.0)	
Not reported	46 (83.6)	9 (16.4)	15 (32.6)	31 (67.4)	

SD = standard deviation; IQR = interquartile range; PT = physical therapy; n/a = p-value could not be estimated due to data not available; VAS = visual analogue scale.

* The sample included patients resolved with PT alone and resolved with 1-2 injections (i.e., no increased need for surgical management) and those referred back for surgical consult (i.e., increased need for surgical management). We compared the percentage of increased need for surgical management across various patient characteristics.

† The sample included patients resolved with PT alone (i.e., no increased need for corticosteroid injection) and those resolved with 1-2 injections (i.e., increased need for corticosteroid injection). We compared the percentage of increased need for corticosteroid injection across various patient characteristics.

Author contributions

Katie Crockett: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Emma Juliet Yanko:** Writing – review & editing, Writing – original draft, Visualization, Software, Resources, Project administration, Methodology, Formal analysis, Conceptualization. **Thuy Le:** Writing – review & editing, Writing – original draft, Software, Methodology, Formal analysis, Data curation. **Curtis Gasmto:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Conceptualization. **Richard Bourassa:** Writing – review & editing, Supervision, Project administration, Methodology, Investigation, Conceptualization. **Chris Thomson:** Writing – review & editing, Supervision, Methodology, Conceptualization.

Declaration of Competing Interest

None.

Acknowledgments

Thank you to Janelle Parnitsky, occupational therapist, for her critical role in data collection.

Previous publication statement

This research has not been previously presented or published.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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