Experience From A “One-Stop” Trigger Finger Clinic: A Report Of Outcomes Following Corticosteroid Injection

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Citation

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Abstract

Background:Steroid injections can be used safely to treat trigger fingers. We aimed to determine the accuracy of referring General Practitioner (GP) diagnoses of trigger finger made to an upper limb surgeon. We also aimed to determine the efficacy of a serial two steroid injection then surgery technique in the management of trigger fingers. Methods:Data was collected prospectively from a “one-stop” trigger finger clinic (based in a district general hospital). 200 trigger fingers identified from September 2005 to November 2008, giving a minimum 1 year follow-up. Data was analysed for correct referring diagnosis, resolution/ recurrence rate following injection and the effect of age, injector grade, diabetes on the rate of recurrence. Results: GP diagnoses were correct in 94% of referrals. Recurrence free resolution after one steroid injection was achieved in 74% of cases, rising to 84% after a second injection. The grade of injector did not influence the rate of resolution (p=0.967) or recurrence (p=0.818). Age was the only statistically significant factor, with recurrences being 8.3 years younger (95% CI 4.1 – 12.6yrs; p=0.0002). 15% required surgical release after failure of two steroid injections. Conclusions: Steroid injection for trigger finger is a safe, easily performed technique that can give recurrence free resolution in up to 84% using a serial two steroid injection technique. This is an easily acquired technique that has obvious potential to be performed in the primary care setting, thus reducing the burden on hospital based specialist upper limb services, as only 15% required surgical intervention.

INTRODUCTION

Trigger finger (stenosing tenosynovitis) is a common hand condition that is frequently seen in the primary care setting ([1]; [2]). Typical early manifestations include discomfort around the metacarpo-phalangeal joint and mild catching of the digit on attempted extension, with potential progression to complete locking in a flexed position. The inability of the flexor tendons to glide smoothly through the flexor sheath is the result of a mismatch between the diameter of the flexor sheath and its contents. Fibrocartilaginous metaplasia leads to nodularity of the flexor tendon and thickening of the A1 pulley with subsequent triggering occurring at this level due to the greatest angulation of the flexor tendons ([3]; [4]).

Trigger finger lends itself to “one-stop treatment” due to its relative ease of diagnosis without special tests and its simple treatment with corticosteroid injection, which is an easily taught technique. A recent 10-year trigger finger audit from Southern Derbyshire showed a significant increase in incidence by 16% to 28 per 100 000 population per year (from 1990 to 2000) [2], which highlights the need to optimise management and potentially reduce the burden on hospital based specialist services.

In an attempt to improve efficiency in our own institution, a “one-stop” clinic was set-up to manage all General Practitioner (GP) referrals with a potential diagnosis of trigger finger. As well as aiming to standardise treatment regimes, a prospective clinical audit was set up to investigate the accuracy of referring GP diagnoses and to determine the success rate of steroid injection with respect to clinician experience.

METHODS

A prospective clinical audit was set-up following the introduction of a “one stop” clinic in our district general hospital (416 inpatient beds, serving a population of approximately 125 000) in September 2005. All GP referrals with a provisional diagnosis of trigger finger were vetted for this clinic. The clinic consisted of a consultant upper limb surgeon, a staff grade orthopaedic surgeon and an orthopaedic surgical trainee. The level of experience of the orthopaedic trainees varied greatly – ranging from junior trainees (ST1 level) to more senior trainees (>ST3, SpR). All

orthopaedic trainees, regardless of their level of experience, were taught the injection technique by the consultant and then performed the procedure under supervision until confident.

The following data was collected on a proforma for each referral: patient occupation, handedness, co-morbidities, recurrence, affected digits, treatment outcome and grade of managing clinician. Affected trigger digits were injected with 20mg triamcinalone acetate and 1% lignocaine through alcohol-cleansed skin into the proximal end of the flexor tendon sheath.

At a consultation resulting in a steroid injection, patients were given verbal and written instructions to contact the department if they had failure of complete resolution or recurrence of their symptoms within 6 weeks. If this occurred then self-referral back to clinic or GP re-referral was accepted and patients were appointed to the next available trigger finger clinic, reassessed and re-injected if necessary. The onus was therefore placed on the patient to ensure appropriate follow-up only if needed, therefore avoiding unnecessary clinic attendances and providing a true "one-stop" clinic. As patients were not actively followed up, the assumption was made that those who did not re-attend had successful resolution of their triggering. In the event of a second failure, the patient was offered surgical release of the A1 pulley under local anaesthetic as a day case.

Data was collated and analysed with statistical significance taken at $p<0.05$. Fisher's Exact test was used to assess the effect of injector grade on resolution after the first injection. Student's t-tests were used to assess the effect of age and duration of symptoms on recurrence after the first injection. Fisher's Exact test was used to assess the effect of the following variables on recurrence after first injection: injector grade, Insulin Dependent Diabetes Mellitus (IDDM), Non-Insulin Dependent Diabetes Mellitus (NIDDM), rheumatoid arthritis and "other upper limb tendinopathies" (adhesive capsulitis, supraspinatus tendinitis, medial/ lateral epicondylitis, bicipital tendinitis). Lastly, the effect of the initial trigger grade was analysed for its effect on recurrence after first injection using the Chi-Squared Test.

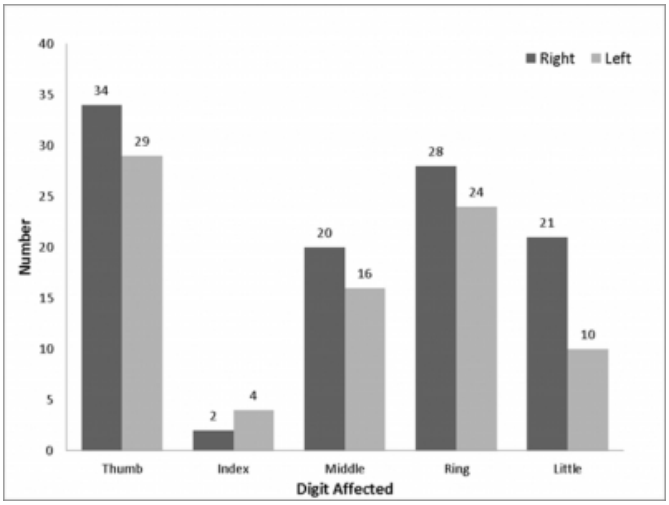
RESULTS

From September 2005 to June 2009, 237 referred "trigger fingers" were identified from all GP referrals. Of these, 200 were identified up to November 2008, thus giving at least a one-year follow-up to the point of analysis of the data (December 2009). The mean follow-up was 2.5 years (range 1.0 – 4.4 years).

The mean age of the 200 patients was 69 years (95% CI: 60.1 – 63.6 years) and 118 (59%) were female. One hundred and seventy one (86%) were right handed, 18(9%) were left handed and 11(5%) were unrecorded. Figure 1 shows the incidence of triggering by digit involved. The median duration of symptoms at presentation was 3 months (range 0.75 – 36 months).

Figure 1

Figure 1: Chart of incidence of trigger finger by digit



The mean waiting time from referral was 42 days (95% CI: 38 – 45 days). The GP diagnosis was correct in 188 (94%) cases and the 12 (6%) incorrect diagnoses included Dupuytren's contractures (3), pseudo-triggering/ extensor tendon subluxation (3), osteoarthritis (2), pearl ganglion (1), epidermoid cyst (1), focal dystonia (1) and unrecorded (1).

Triggering was graded as per Green's classification [5], with numbers affected and percentages in brackets:

Out of 188 correct diagnoses of trigger finger, 177 digits underwent steroid injection in the clinic. Of the 11 remaining, eight spontaneously resolved, two were not injected due to bilaterality of triggering and one requested surgical release. These 11 were excluded from further analyses. Of the 177 digits injected, 167 had resolution of their symptoms (59 by consultant; 103 by trainee; 5 unknown) and 10 had no benefit (3 by consultant; 7 by trainee). The 10 that had no benefit from a single injection were managed as follows; eight underwent surgical release,

one had a second injection with resolution thereafter and one was lost to follow-up.

Of the 167 digits that initially resolved following the first injection, 129 (73% of the 177 digits that underwent injection) did not have a recurrence at follow-up. Thirty-eight recurred (12 by consultant, 24 by trainee, 2 unknown) at a mean of 9.1 months (95% CI: 7.6 – 10.5 months). The difference in proportions of resolution of symptoms by injector grade using Fisher's Exact test was 0.015 (95% CI: 0.055 - 0.085; p=0.967), indicating that the grade of injector (consultant or trainee) did not affect the rate of resolution following the first injection.

From these 38 first recurrences, 21 underwent a second injection, 15 underwent surgical release, one spontaneously resolved and one was lost to follow-up. Of the 22 digits that had a second injection (including the one digit that had a second injection following failure of resolution after the first injection) 18 resolved and remained recurrence free, bringing the overall recurrence free rate at follow-up to 84% (148 out of 177). Four had a second recurrence or failure of resolution and these patients underwent surgical release. Overall, only 27 out of the 177 (15%) correct diagnoses referred required surgical release. Importantly, no complications following corticosteroid injection were reported or recorded.

Table 1 summarises the statistical analyses performed to assess the effect of variables that may be associated with recurrence following the first injection. Age was found to be the only statistically significant factor, with those who developed a recurrence being younger by a mean age of 8.3 years (95% CI: 4.1 – 12.6yrs; p=0.0002). Lastly, the effect of the initial trigger grade was analysed for its effect on recurrence after first injection using the Chi-Squared Test, which showed no statistical significance (DF=3, χ^2=4.35; p=0.226).

Figure 2

Table 1: Effect of possible influencing variables on recurrence after first injection († - Student's t-Test for difference in means; ‡ - Fisher's Exact Test for difference in proportions)

		Recurrence after First Injection		*Difference (95% CI)*	*p*
		Yes (n=38)	No (n=139)		
Mean Age (years)		55.5	63.9	8.3 (4.1 - 12.6) †	0.0002
Mean Duration of symptoms (months)		6.55	6.21	0.34 (-2.14 - 2.82) †	0.786
Injector Grade	Consultant	12	47	-0.03 (-0.161 - 0.102) ‡	0.818
	Trainee	24	79		
IDDM	Yes	4	8	-0.127 (-0.401 - 0.146) ‡	0.481
	No	34	131		
NIDDM	Yes	3	19	0.058 (-0.045 - 0.161) ‡	0.513
	No	35	120		
Rheumatoid Arthritis	Yes	0	1	0.216 (0.155 - 0.277) ‡	1
	No	38	138		
Upper limb tendinopathies	Yes	6	9	-0.202 (-0.458 - 0.053) ‡	0.146
	No	32	130		
Sex	Male	12	58	-0.072 (-0.192 - 0.048) ‡	0.344
	Female	26	81		

DISCUSSION

Trigger finger can be reliably diagnosed in the primary care setting, supported by our finding that 94% of our GP referrals for trigger finger were correct. This is a similar finding to the large audit performed by Burke and Bradley [6] that included a survey of the perceived ease of diagnosis by local GPs. They found that 86.5% of GPs felt that trigger finger was not difficult to diagnose, which is line with our local findings.

Our prospective clinical audit has confirmed that corticosteroid injection for trigger finger is an effective treatment with a recurrence free rate of 73% after one steroid injection, rising to 83% after a second steroid injection within our follow-up period. This compares well with the reported success rates in the literature with recurrence-free resolution of symptoms after one steroid injection ranging from 49-84% rising to 72-93% with a second injection ([7]; [8]; [9]; [10]); [11]); [12]; [13]; [14]; [15]). We recognise that a potential source of under-reporting of recurrence or failure of resolution of symptoms may have occurred, as patients were not formally followed up after steroid injection with an assumption made that those not re-attending had a successful resolution of their symptoms. Patients were given an information sheet and strict instructions on how to arrange a follow-up appointment should their symptoms not have resolved within 6 weeks or if they recurred. However, we believe that this not only empowers patients to take responsibility for their health-care, but also avoids unnecessary follow-ups that lead to a potentially inefficient

usage of available outpatient resources.

Whilst it may be a significant assumption from our reported outcomes that the success and complication rate of corticosteroid injections for trigger fingers administered by GPs in the primary care setting would be comparable to those achieved by orthopaedic consultants or trainees, the lack of difference in recurrence rates according to injector grade in our series suggests that corticosteroid injection is easily taught/ learnt. It should be noted that the junior orthopaedic trainees had minimal orthopaedic experience. With adequate training in safe injection technique, it can therefore be reasonably assumed that GPs would be confident in diagnosing and injecting the trigger digit.

In spite of the simplicity of steroid injection, Burke and Bradley [6] found that only 21% of GPs in their area were confident to perform this in the primary care setting. Interestingly, Taras et al. [15] noted that the efficacy of a corticosteroid injection did not necessarily correlate with the location of injection – accurate intra-sheath injection was only achieved in 37% with a success rate of only 47% compared to success rates of 50% for mixed (sheath/ subcutaneous) and 70% for subcutaneous injections. Furthermore, the diagnostic accuracy of GPs in our study along with the lack of reported injection-related complications should provide reassurance that an incorrect diagnosis would be uncommon and an inadvertent injection unlikely to adversely affect the patient.

Twenty seven out of 177 (15%) correctly diagnosed trigger digits that received a steroid injection required surgical release. Thus, 150 consultations could have been avoided if only those who failed treatment with two serial steroid injections were referred. This has economic implications when the cost of two local anaesthetic/steroid injections are compared to alternative utilisation of the outpatient clinic time saved.

Benson and Ptaszek [9] suggested that although surgical release after a failed steroid injection was more expensive, the permanency of symptomatic relief might offset the increased cost. More recently, a cost – minimisation analysis performed by Kerrigan and Stanwix [16] found the "two injection then surgery" management algorithm to be the least costly, with primary surgical release being the most expensive.

In our series, the thumb was the most commonly affected, followed by the ring, middle, little and index fingers in that order (see Figure 1). This is roughly in keeping with reports of incidence per finger by other authors ([17]; [18]; [19]; [20]; [15]) though there is wide variation noted amongst some series. With regards to patient risk factors for recurrence, younger age was the only variable found to be associated with a statistically significant increase in recurrence following the first steroid injection. Rozental et al [21] found that younger age, IDDM, involvement of multiple digits and a history of other tendinopathies of the upper extremity were associated with a higher rate of treatment failure. Based on our findings, prediction of those that are most like to need surgery was not possible.

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