

Results Of Tenosynovectomy And Intralesional Steroid In The Management Of Trigger Fingers

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Citation

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Abstract

Tenosynovectomy is usually reserved for those patients in whom conservative treatment for trigger fingers had failed. Failure of conservative treatment may imply recurrence, ineffective treatment or intolerable complications; this leads to prolonged discomfort from pain, suboptimal function and waste of time. Our objective was to compare the results in terms of safety, effectiveness, tolerability and recurrence after tenosynovectomy with that of intralesional methylprednisolone in the treatment of trigger fingers. The patients were randomly assigned to the study groups (tenosynovectomy-Group A and injection methylprednisolone-group B). There were 28 patients in Group A with 30 trigger digits and 25 patients in group B with 26 trigger digits. All the patients were followed up for one year. In group A, all the patients had immediate relief following tenosynovectomy, tolerated the procedure and were satisfied with the outcome. There was neither wound infection nor recurrence after tenosynovectomy. Relief of the trigger sensation occurred after an average of 16 days in group B. Nine of the patients in group B suffered recurrence of symptoms within one year of follow-up. From the results, tenosynovectomy offers better outcome than intralesional methylprednisolone in the treatment of sclerosing tenosynovitis. Therefore, we are advocating the need to perform tenosynovectomy early in order to shorten the duration of patients' discomfort, pain and suboptimal function of the trigger finger.

INTRODUCTION

Sclerosing tenosynovitis (Trigger finger) is the result of inflammation of the sheath of the flexor tendons which is associated with localized thickening of the tendon sheath. The constrictive effect of the thickened sheath leads to swelling of the tendon with associated restriction of frictionless movement. The thickened sheath permits the flexor tendon to pass through it during flexion but prevents extension of the finger. The prevention of extension makes the finger to 'lock' in flexion; an attempt at passive or active extension of the locked finger is associated with pain and trigger sensation.^{1,2,3} There is no known cause for tenosynovitis. However, it is thought to be due to repeated frictional injury to the tendon sheath which leads to fibrosis and narrowing of the sheath.² Conservative treatments include: rest using finger splints; NSAID (Non-steroidal Anti-inflammatory Drug); local steroid injections.^{1,2,3,4,5,6} Steroid injection is the most effective form of non-operative treatment and when it fails, there arises the need for tenosynovectomy. Tenosynovectomy entails partial excision of the thickened part of the tendon sheath. This operation of tenosynovectomy is usually done under local anaesthesia through a 1 – 2centimetres long volar crease incision which

is unlikely to form an unsightly scar. Satisfactory release of the constriction can be assessed by asking the patient to move the involved finger.

Comparatively, the failure rate of methylprednisolone injection is as high as 20-30% after three doses of steroid injection^{7,8} whereas tenosynovectomy has a failure rate of 3%.⁹ The high failure rate of steroid injection implies that one out of every four patients loses valuable time and suffers inconveniences from failed non-operative treatment while properly done surgery gives immediate relief in all cases operated with 3% chance of recurrence. Besides, complications after tenosynovectomy are rare and they include: traction injury to or transection of the digital nerves; unsightly scars; bowstringing¹⁰ and/or ulnar deviation of the finger after extensive release of the fibrous pulley system of the digits. Other complications are reflex sympathetic dystrophy and Dupuytren's contracture.¹¹ In developing countries where surgeons are overwhelmed because of the number of patients they have to cater for, a step that rapidly solves a problem with minimal related risk should be advocated. That tenosynovectomy can achieve cure and early return to comfortable use of the digit without high

recurrence rate or distressful complications is enough reason to advocate early surgical treatment. Therefore, the aim of this study was to compare the safety, effectiveness and tolerability of primary tenosynovectomy with that of intralesional methylprednisolone in the treatment of trigger.

PATIENTS AND METHODS

Patients presenting to the out-patients' clinics with trigger fingers or thumb were eligible for inclusion in the study. We excluded any patient with history of recurrent boils, fever lasting more than one month or unexplained weight loss and children. This study was done in the University of Benin teaching hospital (A public tertiary referral centre) and Cenit medical centre (A private specialist orthopaedic centre) in Benin City, Nigeria from January 2002 to May 2006. We proposed to recruit 25 patients in each group. The proposed sample size was determined based on the assumption that recurrence rate as a primary outcome measure will be 80% better amongst patients who had tenosynovectomy. At a significance level of 5% and power of 90% we estimated the sample size for each group to be 25. To allow for 20% loss to follow-up, we decided to recruit 30 patients per group. All tenosynovectomies and intralesional injections were carried out by the first author. The patients were randomized into two groups by consecutive sampling into either group A or B by sampling odd numbered patients into group A and even numbered patients into group B from a continually upgraded list. We counseled them and obtained informed consent for tenosynovectomy in Group A and intralesional methylprednisolone injection in Group B. In group B patients, we injected a combined injection of methylprednisolone 40mg in 1ml and 1ml of 2% lidocaine around and into the thickened portion of the tendon sheath under the guidance of a palpating index finger using a 23G needle. Patients in group A had surgery which was done under strict adherence to asepsis in the hospitals' operating theatres. The operation of tenosynovectomy was done under local anaesthesia without the application of a tourniquet. No prophylactic antibiotic was given. All the patients were encouraged to commence use of the finger immediately after tenosynovectomy or intralesional injection. Diclofenac sodium tablets 100mg was given to all the patients for five days following surgery or intralesional injection. Out-patients' follow-up was carried out for at least one year. Assessment of outcome was made in the intra-operative and immediate post-operative period and during follow-up.

Active and passive movements were carried out intra- and post-operatively as well as in the clinic to confirm

satisfactory release of the restrictive fibrous tissue responsible for the trigger finger. The patients filled self assessment questionnaires to evaluate relief of symptoms and the level of satisfaction with treatment at the end of surgery, two, eight, twenty-four and fifty-two weeks after surgery. The presence or absence of complications such as paraesthesia, loss of sensation over parts of the digits, hypertrophic scar, and residual loss of extension, wound haematoma and infection were noted

RESULTS

A total of fifty-three patients, seven males and forty-six females, were seen and treated.

The average follow-up was 11.9months (Range 6-18months). The thumb was the commonest digit involved in sclerosing tenosynovitis (Table 1).

Figure 1

Table 1: Baseline demographic and clinical characteristics of patients

Parameter	Tenosynovectomy	methylprednisolone
Number of patients	28	25
Number of digits involved	30	26
Number of trigger thumbs	15	13
Number of index fingers	8	7
Number of middle fingers	6	6
Number of ring fingers	1	0
Number of small fingers	0	0
Male: Female ratio	1: 6 (4:24)	1:7 (3:22)
Procedure time (Minutes)	25.6 \pm 7.2 SD	5.2 \pm 2.1SD
Age of patients	42.8 \pm 19.3 SD	38.1 \pm 7.2SD

Intralesional injection was five times faster to carry-out than tenosynovectomy. There was immediate relief from the trigger feeling in all 28 patients who had tenosynovectomy. No patient had a poor outcome in group A. On the day of the procedure eight patients had excellent outcome and 20 had good outcome in group A (Table 2).

Figure 2

Table 2: Level of patients' satisfaction with tenosynovectomy for trigger digits

Outcome	Day 0	2 weeks	4 weeks	8 weeks	12 weeks	24 weeks
Poor	0	0	0	0	0	0
Fair	0	0	0	0	0	0
Good	20	3	0	0	0	0
Excellent	8	25	28	28	28	28
Trigger relief	30	30	30	30	30	30
Recurrence	0	0	0	0	0	0

One patient in group A had numbness over the radial border of the thumb following tenosynovectomy from which there was full recovery in eight weeks. The tenosynovectomy incisions healed without infection or unsightly scarring. No patient in group B had immediate relief from the trigger sensation after injection of methylprednisolone. On the day of the procedure, Twenty-one patients had fair outcome while four had poor outcome. At two weeks after injection only one patient had an excellent outcome. The number of patients who benefited from the intralesional injection improved after repeated injections at intervals of eight weeks. Twenty-one patients obtained relief from trigger feeling four weeks after the first injection (Table 3).

At 24 weeks, no recurrence had occurred in group A but seven patients have had repeat injections because of recurrence trigger feeling. There was no observed initial effect in four cases in group B.

Figure 3

Table 3: Level of patients' satisfaction with intralesional methylprednisolone injection

Outcome	Day 0	2 weeks	4 weeks	8 weeks	12 weeks	24 weeks
Poor	4	4	4	4	3	1
Fair	21	5	0	3	1	0
Good	0	15	17	12	2	0
Excellent	0	1	4	6	20	24
Trigger relief	0	16	21	18	20	24
Recurrence	0	0	0	3	4	1

DISCUSSION

All the patients in the tenosynovectomy group demonstrated effortless finger movement immediately after surgery and they were pain free at follow-up fourteen days after surgery. Immediate relief after tenosynovectomy is the expected

outcome of excision of the restrictive 'fibrotic' part of the tendon sheath and it should be accompanied by cessation of pain. The result in this study is in keeping with the above expectation. The patient who suffered from post-operative numbness must have suffered injury to the digital nerve in the course of exposure of the tendon sheath.¹⁰ That the numbness resolved over eight weeks may suggest that the injury was the result of traction rather than division of the nerve.

One hundred per cent successful surgical treatment had been reported with a recurrence rate of 3% in previous studies^{9,12}. Although there is no recurrence after tenosynovectomy in the current study group so far, the mean follow-up time (11.9 months) is not long enough to make an assertive statement on recurrence rate. This shortcoming of short follow-up time notwithstanding, it is obvious that it is beneficial to both patient and surgeon to have early tenosynovectomy. The surgeon with a busy practice would have more time to devote to his practice if he does not have to give repeated intralesional injections that may altogether fail and still bring both surgeon and patient to the option of surgery. Because pain from the needle prick for intralesional injection or local anaesthetic infiltration is the same for each patient, pain during local anaesthesia (At surgery) should not be a deterrent to tenosynovectomy. With strict adherence to asepsis as a fundamental step to prevention of infection it is safe to carry out tenosynovectomy for patients with trigger fingers as a primary procedure without recourse to initial conservative treatment. The only complication recorded after tenosynovectomy was the transient digital nerve injury which occurred in one patient (3.4%). This study shows that tenosynovectomy is superior to intralesional injection of methylprednisolone in terms of speed of restoration of function and control of symptoms as well as failure and recurrence rates. The failure and recurrence rates amongst patients treated with methylprednisolone injection were higher than the patients who had tenosynovectomy. This may be attributed to the blind nature of intralesional injection which may lead to delivery of the drug at the wrong site and the slow onset of action of the drug. The value of adding lidocaine to the preparation is apparent in the immediate relief of pain which in addition serves as a determinant of delivery of the drug at the right site. In conclusion, we wish to recommend that tenosynovectomy for trigger thumb and fingers should be carried out early in the treatment of trigger finger unless the patient withholds consent.

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