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Research Article

Outcomes of Outpatient Percutaneous Release of Trigger Finger

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Abstract

Introduction: Trigger finger is caused by stenosing tenosynovitis, resulting in painful catching of the involved flexor tendon as the patient flexes and extends the digit. Treatments include Nonsteroidal anti-inflammatory drugs (NSAIDs), splinting, corticosteroid injection, open and percutaneous release.

Aim of the Study: The aim of this study was to evaluate the results of percutaneous trigger finger release using 18G hypodermic needle.

Materials and Methods: A prospective study of 80 patients for treatment of trigger finger by percutaneous release by 18G needle was conducted at L.G Medical college and hospital, Ahmedabad, Gujarat between 1st January 2019 to 31st December 2019. Written Consent was obtained for Surgery. Patients were followed up in opd on 1st week, 1 month, 3rd month, 6th month, 12th month and evaluated for complications and re-occurrence of symptoms.

Results: A total of 80 patients with trigger fingers were included in this study, out of which 10 patients did not follow up on time. Successful release was achieved in 68/70 (97.14%) patients. There was no patient who experienced any issues like nerve injury, wound complications, decreased sensation and tendon bowstringing.

Conclusion: Our review showed that this technique for release of trigger finger is less costly technique with more patient oriented, less complications and better recovery rate. This is a day care procedure.

Keywords: Day Care Procedure; Trigger Thumb; Trigger Finger; Hypodermic Needle

Introduction

Trigger finger is caused by stenosing tenosynovitis, resulting in painful catching [1] or popping of the involved flexor tendon [2] as the patient flexes and extends the digit. Digit fixation occurs in the initial stages and it will lead to painful clicking in the later phase. Considering the advance stages the digit gets fixed in flexion which requires passive manipulation of for full extension. Over period of time because of pain and non-compliance of the patient, guarding appears in that particular digit leading to secondary contractures at the proximal interphalangeal joint. Impingement of the digital flexor tendons occurs as they are passing through a narrowed A1 pulley [3] at the level of the metacarpal head.

Annual incidence of Trigger finger is 28 cases per 1,00,000 population [4], which rises to 10% in patients with diabetes [5]. Diabetes [6], gout, renal disease, rheumatoid arthritis [7] and other rheumatic diseases which causes secondary trigger thumb and finger has bad prognosis than primary trigger finger even after conservative or surgical management [8]. Thumb is most commonly affected finger in patients having multiple trigger finger, followed by ring, middle, little and index finger [9].

Various Modalities like Nonsteroidal anti-inflammatory drugs (NSAIDs), splinting, corticosteroid injection, splinting percutaneous release and surgical release [4,10] are various ways of treatment for trigger finger. In Surgical procedure, A1 pulley is released via a longitudinal or transverse incision [10-14]. This is a rapid and cost-effective method [15,16] which saves from surgical complications like infection, painful scar, tendon bowstringing [5,10,17] and results in better functional outcome. Percutaneous release lead to more patient satisfaction and sooner recovery rates [14].

The primary intention of the study was to study the results and outcomes of the percutaneous needle release of trigger thumb/finger being an OPD based procedure.

Materials and Methods

The current study is a prospective study conducted at L.G Medical College and hospital, Ahmedabad Gujarat between 1st January 2019 to 31st December 2019. 80 patients were included in the study who were not responsive to conservative management.

Inclusion criteria being Age > 18 years, non-responsive to conservative treatment for more than three months, Exclusion criteria being Age < 18 years, previous laceration or injury to that tendon, Eczema at site of needle insertion. The entire intention and outcome of the procedure with its consequences were taken into consideration and explained to the patients. Patients were followed up in opd on 1st week, 1 month, 3rd month, 6th month and 12th month. In the initial OPD visits we checked for wound complications, neural sensations, activity time to pre-surgery and recurrence. During other follow-ups, we mainly focused on recurrence of symptoms. Adequate pre-designed forms were made and filled up by the respective patient and data analysis was done by standard software.

Figure 1 and 2: Anatomical landmark for the site of trigger thumb and fingers.

Figure 3a and 3b: (a) Insertion of 18-gauge needle to release A1 pulley and (b) photograph after completion of the procedure.

Surgical technique used to release A1 pulley percutaneously was as described by Eastwood., *et al* [18]. The procedure was performed under local anesthesia and release was done using 18G hypodermic needle. No antibiotics were given prophylactically. The local anaesthetic comprised of a 2% solution of Lidocaine with adrenaline [22,23], infiltrated with a long 25-gauge needle over the volar surface of the distal palmar crease of the affected digit. The involved finger was hyperextended to facilitate the palpation of A1 pulley. Post breaching the skin, the needle was guided as it reached tendon, crossed checked by movement and counter-movements of finger/thumb. Withdrawal of the needle was done till the tendon movement. A1 pulley was released the congrating upward and downward movements and friction movement was felt and it was judged that the needle tip cleared out the fibres of the pulley. Adequate release was confirmed by subsequent movements of thumb/finger. Clinical judgement and confirmation was made after asking the patient to repeat the movements.

The outcome of the procedure was instant relief of the symptoms. Wound was cleaned with betadine and spirit and sterile leucoplast was applied (Figure 1). Patients were advised to start physiotherapy for the operated finger/Thumb as soon as the procedure ended and continue until the surgeon advises to stop. Oral analgesic paracetamol 650 mg twice a day was given for three days.

Figure 4a and 4b: 18G needle percutaneous trigger thumb procedure.

Figure 5a and 5b: Mobilisation after the procedure.

Results

A total of 80 patients with trigger fingers were included in this study, out of which 10 patients did not follow up on time. Out of total 70 patients, 49 (69.57%) were female and 21 (30.42%) male with various trigger fingers. The mean age was 44.5 years (range 25 to 69). There were 42 (60%) thumbs, 18 (25.7%) ring fingers, 8 (11.42%) middle fingers and 2 (2.85%) little fingers affected.

In initial 1st week, four (5.71%) patients reported with triggering and wounds complications, out of which two patient got relieved in 2 weeks and for other two open release was performed. Other 66 patients were completely relieved without any complain in 1st week. Zero patients had complications of vascular, tendon injury, bow stringing of tendon. The success rate of percutaneous release was 68/70 (97.14%) with return to normal daily activities within 1st week. No patient had any recurrence at the end of three months of follow up.

Discussion

In our study, successful percutaneous release of A1 pulley was achieved in 68/70 (97.14%) returning to normal daily activities. In 2 patient of our study as there was inadequate release re-surgery in form of open procedure was performed. No patients had complications of digital nerve, vascular or tendon injury, or tendon bowstringing or superficial skin infection.

Technique performed by Eastwood., *et al*. [18] is a convenient, minimally invasive and is more popular than open surgery. Sahu., *et al*. [22] reported successful results in 95.6% patients which were comparable to our result showing 97.14% success rate.

Mohsen [24] in his study, reported 97% success rate of percutaneous release in 40 trigger digits.

Ramy [25] reported in a study of 42 patients in which he informed incomplete release of A1 pulley in three fingers (6.97%) compared to our study which shows incomplete release in 2 patients (2.85%).

Mishra., *et al*. [24] presented a case series of percutaneous release of trigger fingers in which they reported success rates of 95.4%, with no recurrence and concluded that the procedure was safe and effective with lower complication rates compared to open surgery, which is the aim of our study too.

The relative anatomical surroundings between the radial digital neurovascular bundle of the thumb and the A1 pulley has been demonstrated in various cadaveric studies [19,26,27].

Pope and Wolfe [19] performed percutaneous release in 25 cadaveric palms and found that the radial digital nerve was as close as within 2 to 3 mm of the needle site in three of five thumbs and five of five index fingers. Ferhat Guler., *et al*. [27] reported digital nerve injury in 5.7% patients who underwent percutaneous release of trigger thumb. In our study, zero patient had this complication.

To protect neural damage following precaution need to be implemented during the procedure:

1) Full extension of thumb is required during the procedure to allow the A1 pulley move anterior to the neurovascular bundle.
2) The position of the former should be in hyperpronation for the adequate release [22].
3) Metacarpophalangeal flexion crease should be the landmark for needle insertion.

Moreover there is a significant cost difference between the two procedures. Open release being surgical procedure requires operation room, drapes, day care admission while percutaneous release just require a procedure room in out patient department and local anesthesia, pair of sterile gloves and 18G needle.

Conclusion

Percutaneous release technique of trigger finger/thumb is pocket friendly, less complicated, technique with easy patient compliance, early recovery and less infection issues which can be easily performed during day care. The only pitfall being its blind nature. Some of the limitations of this study were small numbers of cases, lacking comparison with other release technique (open release).

Conflict of Interests

None.

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