Original Article

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Percutaneous Release of Trigger Finger: A Safe And Cost effective Procedure

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Learning Points for this Article

This articles shows us that although in its initial stages percutaneous release of trigger finger is a safe and cost effective procedure.

Abstract

Introduction: Trigger finger is a common cause of pain and disability of the hand. Trigger finger (or thumb) arises either from thickening of the flexor tendon sheath (which occurs following tenosynovitis of infective, traumatic or rheumatolgical origin) or from nodular thickening of the flexor tendon itself which may be congenital. Percutaneous release results in earlier functional recovery and patient satisfaction. This is a cost-effective and rapid method which saves a surgical procedure and results in a better functional outcome.

Key Words: Trigger finger, percutaneous release, outpatient treatment, cost-benefit analysis.

Introduction

Trigger finger is one of the most common causes of pain and disability of the hand[1,2] . This condition results in painful catching[3] or popping of the involved flexor tendon[4] as the patient flexes and extends the digit. The name trigger finger is earned from the painful popping sound elicited by flexion and extension of the involved digit. First described by Notta in 1850[5], it is caused by a difference in diameters of a flexor tendon and its retinacular sheath due to thickening and narrowing of the sheath. On occasions, there will be flexional lock of the digit which will require passive manipulation of the digit for full extension. Over a period of time, guarding and reluctance on the part of the patient to fully move the digit can lead to secondary contractures[6] at the proximal interphalangeal joint. The pathophysiology of tendon entrapment is due to mechanical impingement of the digital flexor tendons as they pass through a narrowed A1 pulley[7] at the level of the metacarpal head. The condition has a reported annual incidence of 28 cases per 100,000 population[8], or a lifetime risk of 2.6% in the general population[8]. This rises to 10% in patients with diabetes[9]. Secondary trigger finger can be seen in patients with diabetes[9], gout, renal disease, rheumatoid arthritis[10] and other rheumatic diseases and is associated with a worse prognosis after conservative or surgical management[1]. The most common form is the primary type 4, found in otherwise healthy middleaged women with a frequency 2 to 6 times that seen in men[11]. The patients are classified from grade I which is pretriggering to grade IV with flexion contracture. In patients with multiple trigger digits, the most commonly affected is the thumb[12], followed by the ring, middle, little, and index fingers[3]. The bimodal distribution represents two different clinical groups, not only for age but also in incidence, sex distribution, digit affected, treatment, and outcome[1].Treatment comprises of local corticosteroid injections[13], splintage[14], hydrotherapy, analgesics[11], percutaneous release and eventual open surgery in patients not responding to the above regimens. Percutaneous release[15] results in earlier functional recovery and patient satisfaction. This is a rapid and cost-effective method[16,17], which saves a surgical procedure and results in better functional outcome. In this study, we performed percutaneous release of trigger finger with 18 gauge needle, followed the patients for at least 3 months and recorded their outcomes in terms of patient satisfaction and range of motion.

Materials and Methods

The current study is a prospective observational study conducted at Dr D.Y.Patil Hospital, Pune for duration of 6 months from Feb 1, 2017 to July 31, 2017. A total of 52 patients were included in the study, with the inclusion criteria being that all adult patients (>18years) presenting with trigger finger diagnosed on the basis of

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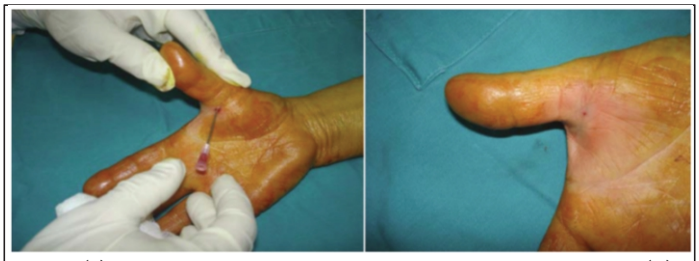

Fig. 1: (a) Insertion of 18 gauge needle to release A1 pulley and (b) photograph after completion of the procedure.

Table 1: Symptoms, grading and degree of hyperextension

CLINICAL FEATURES	n (%)
Symptoms at Presentation	
Catching	**12 (23.1)**
Pain	**25 (48.1)**
Stiffness	**15 (28.8)**
Trigger Finger Grading	
Grade I – Pain and Nodularity	**12 (23.1)**
Grade II – Self Correctable Triggering	**20 (38.5)**
Grade III – Manually Correctable Triggering	**20 (38.5)**
PIP Joint Hyperextension (in degrees)	
0-5	**22 (43.2)**
5-20	**30 (57.7)**

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Table 3: Hand affected and trigger finger grading

Trigger finger grading (Quinell's Criteria)

Hand Affected	Pain And Nodularity	Triggering, Self Correctable	Triggering, Manually Correctable	Irreducible	Total
RIGHT	**5**	**12**	**8**	**0**	**25**
LEFT	**7**	**8**	**12**	**0**	**27**
TOTAL	**12**	**20**	**20**	**0**	**52**

Table 4: Outcomes	**n(%)**
Objective Outcomes at 3 months	
Satisfactory	47 (90.4)
Unsatisfactory	5 (9.6)
Subjective Outcomes at 3 months	
Unsatisfactory	6 (11.5)
Satisfactory	22 (42.3)
Very Satisfactory	24 (46.2)
PIP Joint Hyperextension (in degrees) at 3 month	
0-5	1 (1.92)
5-10	51 (98.18)

clinical symptoms such as pain, catching and stiffness while those patients experiencing recurrence of the same digit and those on anticoagulants were excluded. Data were collected using a structured format proforma. Patients were included in the study based on a presentation to the orthopaedic consulting clinics according to the selection criteria. A formal written consent was taken from the patients before they were included in the study. Patients were followed up for atleast 3 months after the procedure and on the final follow up they underwent post procedure assessment of finger range of motions using a goniometer. Patient satisfaction with the procedure was assessed through direct questioning and a satisfactory response was considered acceptable in the final follow up. Data were analyzed and the results were presented as mean for continous variables of age and as frequency/percentage for gender, hand and finger involved, finger range of motion and patient satisfaction. All patients underwent percutaneous release with 18 gauge needle after a formal written consent. No antibiotics were given prophylactically. The procedure was done under local anesthesia. The local anesthetic comprised a 2% solution of Lidocaine with adrenaline 18, 19, infiltrated with a long 25 gauge needle over the volar surface of the distal palmar crease of the affected digit. Then, using an 18 gauge needle, the A1-pulley over the metacarpo-phalangeal joint was released in a proximal to distal stroking motion with the sharp edge of the needle, usually requiring one to two sweeps with resultant release of the A1-pulley. This resulted in an immediate relief of symptoms of pain and catching. No suture was applied and a single bandage was applied over the wound. (Fig. 1) In the post-procedure period all patients were asked to move their fingers actively as required. They were followed up in the clinic after 1 week and then at 3 months post procedure to assess functional range of motion.

Results

A total of 52 adult patients with trigger fingers were included in this study. The mean age was 49.65 years with a range of 19-69 years. The most frequent involved digit was thumb (38.5%) followed by index, middle and ring fingers with 28.8%, 25% and 7.7% respectively. The most frequent presenting symptom was pain (48.1%) followed by stiffness and catching with 28.8% each. (Table 1). There was complete relief of symptoms (pain/locking/catching) in 52 out of 52 fingers (100%). No patient had any recurrence in the 3 months period (Table 2). Correlation of hand and grading of trigger finger was also analyzed (Table 3). Subjective and objective outcomes after 3 months were recorded (Table 4).

Discussion

At present open release remains the mainstay of the treatment for trigger fingers. Fingers are still managed by open surgical release in areas where there is limited expertise for percutaneous release. Conservative management is also practiced in patients who do not want to undergo surgical release and includes corticosteroid injections[19]. This results in unwarranted surgical procedures on the one hand and prolonged conservative management on the other hand with persistent patient suffering in both instances. The major disadvantage of open treatment is a small but definite incidence of complications directly related to surgical intervention such as infections, pain, scar formation, joint stiffness or weakness, bowstringing of the flexor tendons due to pulley injuries and digital nerve or artery damage[18].The percutaneous surgical release technique performed by Eastwood et al [20] is a convenient, minimally invasive, economical method with a very low complication rate, and is becoming more popular than open surgery. Sahu et al [9] reported successful results in 95.6% patients(excellent in 82.6% and good in 13%). In another study Ramy [22] analyzed a study of 42 patients in which he reported incomplete release of A1

pulley in three fingers 6.97% and superficial flexor tendon laceration in six fingers (13.95%). Mishra et al [21] reported a case series of the percutaneous release of trigger fingers with the tip of [20] gauge needle 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, comparable to our study. There is a close anatomical relationship between the radial digital neurovascular bundle of the thumb and the A1 pulley. Pope and Wolfe [23] performed percutaneous release in [25] cadaveric palms and found that the radial digital nerve was as close as within 2 - 3 mm of the needle site in three of five thumbs and five of five index fingers. Ferhat Guler et al 24 reported digital nerve injury in 5.7% patients who underwent percutaneous release of trigger thumb. In our study, none of the patient had such injury. Moreover there is a significant cost difference between the two procedures.

Conclusion

This study showed that percutaneous technique for release of trigger finger is a cost effective and safe technique. It is performed as an out patient department procedure, just requires an anaesthesia and a disposable 18 gauge needle and has shown promising results while on the other hand open release surgery requires a day care procedure, use of sterilized equipment, skin incision and a suture. With a resource constraint country like ours, the percutaneous release of trigger finger proves to be a highly cost-effective method. The only disadvantage of percutaneous technique is its blind nature but with very few complications. This study is to make the reviewers aware about this technique and opens the grounds for further elaborated research and extensive studies in the future.

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