

# Percutaneous Trigger Finger Release in Outpatient Clinics

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## ABSTRACT

**Introduction:** Trigger finger is a relatively common problem causing pain and disability of the hand. The first choice is conservative treatment. When conservative treatment fails, open release of the A12-4 pulley is recommended. Percutaneous release of trigger finger is advised by several authors. The purpose of this study is to evaluate the results of percutaneous release of trigger finger with 18 gauge needle. **Materials and Methods:** From January 2014 to December 2015, 18 patients (15 females and 3 males) underwent percutaneous trigger digit release using an 18-gauge hypodermic needle. **Results:** Seventeen of eighteen procedures (94.4%) led to complete relief of symptoms, and in the remaining, one-digit partial symptomatic relief was achieved. There were no complications. **Conclusion:** Percutaneous technique for release of trigger finger is safe, cost-effective technique with significant patient satisfaction. This technique can be performed as an outpatient procedure.

**Key words:** Needle release, percutaneous release, pulley, trigger finger

## INTRODUCTION

Trigger finger is a relatively common problem entity seen by hand surgeons characterized by symptomatic locking or clicking of a finger or the thumb.<sup>[1]</sup>

It was first described by Notta in 1850.<sup>[2]</sup> It is caused by nodule formation or thickening of A1 pulley by its fibrocartilage metaplasia resulting in entrapment of the flexor tendon, thus forming a triggering mechanism.<sup>[3,4]</sup> Mostly, trigger fingers are idiopathic.

The first choice is conservative treatment, and if it fails, the release of the A1 pulley becomes the treatment option for trigger finger. When conservative treatment fails, open release of the A1<sup>[1,5]</sup> pulley is recommended.

In 1958, Lorthioir first described a technique of percutaneous release of trigger digit using a tenotome.<sup>[6]</sup> Percutaneous release using needle was introduced by Eastwood *et al.*<sup>[7]</sup> in 1992 with a high success rate.

In this study, we evaluated the results of percutaneous release of trigger fingers using 18-G hypodermic needle.

## MATERIALS AND METHODS

From January 2014 to December 2015, 18 patients (15 females and 3 males) underwent percutaneous trigger digit release. These patients had either recurrence of trigger digit after injection of steroid (at least for two episodes) or were suffering trigger finger with symptoms Grade 2 (trigger deformity was actively corrected) or higher triggering (Grade 3: Triggering usually correctable by the other hand, and Grade 4: Locked digit)<sup>[8]</sup> for >4 months' duration and not responded to conservative treatment.

The thumb was involved in two cases, the index finger in 1 case, the middle finger in 5 cases, the ring finger in 8 cases, and the little finger in 2 cases. The mean duration of the symptoms before treatment was 5 months (minimum: 3 and maximum: 14). Associated medical illnesses were diabetes mellitus in 1 patient, history of carpal tunnel syndrome in

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5 patients, and rheumatoid arthritis in 3 patients.

All procedures followed were in accordance with the Helsinki Declaration of 1975, as revised in 2008. Informed consent was obtained from all patients for being included in the study.

### Surgical technique

In the outpatient department, after confirmation of the clinical diagnosis, the palmar skin is cleansed and 2 ml 1% plain lignocaine is injected at the site of the A1 pulley [Figure 1] or at the metacarpophalangeal joint crease of the thumb which overlies the proximal thumb pulley.

The precise location of the A1 pulley is important. The point of triggering was located easily by palpation. The surface landmarks of the proximal edge of A1 pulley were marked. These are the metacarpophalangeal crease of the thumb, the proximal palmar crease of the index finger, halfway between the proximal and distal palmar creases of middle, and the distal palmar creases of the ring and little fingers.<sup>[9]</sup>

The finger was held firmly and hyperextended at the metacarpophalangeal joint. Hyperextension is essential, as it causes the flexor tendon sheath to lie directly under skin and allows the digital neurovascular bundles to displace to either side. An 18-G hypodermic needle was inserted into the flexor tendon sheath or nodule proximally, with the bevel of needle oriented along the line of the finger [Figure 2]. Position of the needle in the tendon sheath was confirmed by actively flexing the digit and observing the motion of the needle. The needle was then withdrawn slightly until it ceases to move with flexion of the fingertip. The A1 pulley was cut by moving bevel of needle longitudinally from proximal to distal, and the patient was asked to flex and extend the finger to verify the success of the procedure. Adequate release of the pulley was shown by the disappearance of the triggering on active movement of the digit [Figure 3].

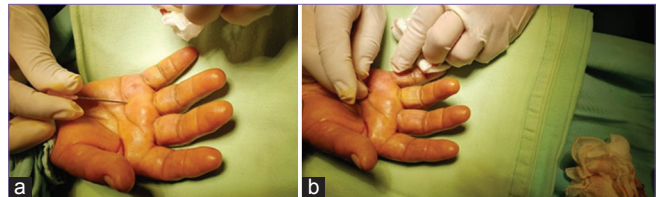
Before withdrawing the needle, 0.5 ml of triamcinolone acetonide (10 mg/ml) is injected through the needle into the sheath. An adhesive dressing is applied at the puncture site, and the patient prescribed a 3-day course of a nonsteroidal anti-inflammatory analgesic.

All patients were reviewed at 3 months and the results were classified as satisfactory, if the treated finger did not suffer further locking and remained well, and as unsatisfactory, if the discomfort was persistent or required open surgery.<sup>[10]</sup>

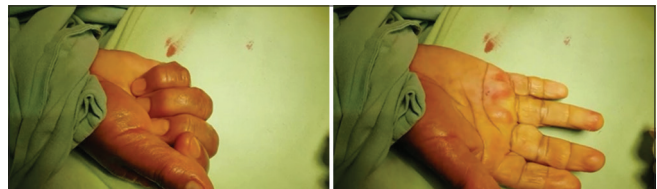
A small dressing was used for a day and the patient was allowed to return to normal activities immediately post-operatively. Analgesic was prescribed for 2 days and then if needed.



**Figure 1:** The procedure can be performed in an outpatient setting under local anesthesia



**Figure 2:** (a) Insertion of 18-gauge needle to release A1 pulley. (b) The A1 pulley is cut by moving bevel of the needle longitudinally from proximal to distal



**Figure 3:** Photograph after completion of the procedure

## RESULTS

Of the 18 fingers treated, there was complete resolution of symptoms in 17 (94.4%). One patient with locked trigger thumb had persistent symptoms, in spite of the reduction of the trigger deformity. The open release was performed in this patient and verified that the release was incomplete.

We did not verify any significant complications, such as lesions of the digital nerve, of the tendons, infection of the tendon sheath, or arching of the flexor tendons.

## DISCUSSION

The decision on how best to treat a patient with a trigger digit is often based on personal preference rather than on scientific fact.

Conservative management is practiced in patients who do not want to undergo surgical release and includes corticosteroid injections. Patients who have failed conservative and/or injection treatment require the surgical release of the A1 pulley.

Currently, open release remains the mainstay of the treatment for trigger fingers, especially in areas, where there is limited expertise for percutaneous release.

Since the percutaneous method was first introduced using a fine tenotome,<sup>[6]</sup> various modifications of the technique have been described and almost of them produce good functional clinical outcomes.

The satisfactory results with the elimination of trigger deformity were achieved in 94.4% of the fingers using this technique. Percutaneous procedure failed in one finger (thumb, 5.6%) due incomplete release of the distal portion of the A1 pulley observed when open release was done three months later. None of the patients had digital nerve injury, tendon lesion, or tendon bowstringing. To avoid these complications, it is necessary to mark the surface anatomy references before the procedure and hyperextend the finger at the metacarpophalangeal joint level.

In this study, we observed that percutaneous release with a 18-G hypodermic needle is a safe procedure with significant patient satisfaction and it can be performed with ease in outpatient clinics.

There is a significant cost difference between the two procedures (open versus percutaneous release). Open release is dealt as a day-care procedure with multiple logistics such as operative room charges, drapes, sterile instruments, and suture material. Percutaneous release of the trigger finger, on the other hand, is done in the outpatient clinic and just requires a local anesthesia, pair of sterile gloves, sterile sheet, and 18-G needle.

The limitations of the current study were small sample size and single arm study.

## CONCLUSION

Our findings support that percutaneous technique for release of trigger finger is safe, cost-effective technique with significant patient satisfaction. This technique can be performed as an outpatient procedure.

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