

Percutaneous Release OF Trigger Finger

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**The Egyptian Orthopedic Journal; 2019
supplement (2), December, 54: 80-83**

Abstract

Background

Stenosing tenosynovitis or trigger finger is one of the most common disorders that affect the flexor tendon apparatus of the hand. Percutaneous release has been previously reported to be easier, quicker, less invasive and less costly than open surgery

Objectives

The aim of this study was to treat trigger finger by percutaneous release.

Patients and methods

A prospective study included 30 patients with 39 trigger finger treated by percutaneous using -18gauge needle was introduced percutaneously in Gamal Abdel Nasr hospital and Menoufia university hospitals. All patients were operated under local anesthesia and follow up for 3 months. The results were assessed at the end of follow up clinically using Tanaka et al. method.

Results

The youngest patient in this study was 33 years old and the eldest was 70 years old. There were 26 females and 4 males showing female predominance. There were 22 patients affected on the right side and 8 on the left. There were 23 patients with only one trigger finger and 7 patients with multiple trigger fingers. All trigger fingers were classified using Green's Classification.

Conclusion

Percutaneous trigger finger release under local anesthesia is a minimal invasive procedure that can be performed in an outpatient setting. This procedure is easy, quicker, less complications and economical with good results.

Key Words

Local anesthesia, Minimal invasive procedure, Percutaneous, Trigger finger.

Introduction

Trigger finger is one of the most common disorders of the hand, it affects quality of life and one of the most common causes of hand pain and disability. [1] Primary trigger finger occurs most commonly in the middle fifth to sixth decades of life and up to 6 times more frequently in women than men, although the reasons for this age and sex are not clear. [2] The risk of trigger finger development is between 2% and 3%, but increases up to 10% in diabetics.[3] A higher risk of trigger finger with carpal tunnel syndrome, de Quervain's disease, hypothyroidism, rheumatoid arthritis, renal disease, and amyloidosis .[4]

It is generally characterized by pain, swelling, the limitation of finger motion and a triggering sensation. [5] It generally involves the thumb or index finger, but can be seen in any other finger. [5]The primary pathology is thickening of the A1 pulley with resultant entrapment of the flexor tendon, thus forming a triggering mechanism. [6]

Initial management of trigger finger is conservative and Involves activity modification, non-steroidal anti-

inflammatory Drugs for pain control, MCP joint immobilization, and corticosteroid injection. [7]

When conservative treatment fails Operative treatment, whether by percutaneous or open release, is highly successful and widely used as the definitive treatment for trigger finger. [8] which has success rates reported up to 100%. [5] The reported complications of surgical release are: Infection, digital nerve injury, scar ,tenderness and joint contractures.[9] Percutaneous release was first performed by Lorthioir in 1958 and success rates of up to 100% without any complications have been reported.[10] Nowadays, percutaneous A1 pulley release is the method of choice in patients unresponsive to conservative treatment, with several percutaneous surgeries, using various instruments and methods with easy application have been described with good results and few complications and high patient satisfaction [11]. The aim of this study is to evaluate the results of percutaneous trigger finger release under local anesthesia.

Patients and Methods

Patients:

Informed consent was obtained from all patients prior to enrollment. Thirty nine trigger finger in 30 patients had been treated by percutaneous release at Gamal Abdel Nasser hospital and Menoufia university hospitals between October 2016 and June 2017. there were 26 female and 4 male whose mean age was 51.53(33 - 70) years, and the average duration from onset of disease until treatment was 10.77 (6-36) months.

Methods:

Preoperative grading:

The severity of trigger finger was assessed using green's grading system. [12] The system creates four distinct grades: Grade 0, normal movement; Grade I, uneven movement;

Grade II, actively correctable, Grade III, passively correctable; and Grade IV, fixed deformity.

Patient selection

The inclusion criteria were as follows: (1) all male and female (2) all fingers (3) Failure of conservative treatment for at least 3 months or after at least one local injection of corticosteroids. (4) any medical comorbidity (5) multiple finger affection Grade , the exclusion criteria were: (1) Severe neurologic deficit of the involved upper extremity (2) Recurrent cases (3) Congenital cases.

Surgical technique.

The palm and affected finger were prepared with anti-septic solution. The release was done under local anesthesia by infiltrating the skin and flexor tendon sheath with 3-5 cm of lidocaine solution (Fig. 1)



Figure (1): Local anesthesia infiltration.

The finger to be released was hold firmly with the metacarpophalangeal joint hyperextended over a rolled towel throughout the procedure. Hyperextension is essential as it causes the flexor tendon sheath to lie directly under the skin and allows the digital neurovascular bundles to displace to either side and dorsally then the A1 pulley was palpated directly over the metacarpal head.

The needle insertion point through the skin is several millimeters distal to the distal palmar crease for the middle, ring and small fingers and the proximal palmar crease for the index finger. The thumb is through the metacarpophalangeal crease.

An 18-gauge needle was introduced percutaneously, perpendicularly through the A1 pulley into the flexor tendon (Fig. 2). The position of the needle within the flexor tendon was confirmed by asking the patient to actively flexing the finger and observing the motion of the needle. The needle was then withdrawn from the tendon and the bevel of the needle oriented longitudinally with the longitudinal axis of the tendon. The length of the A1 pulley was incised using the bevel of the needle by a sweeping motion back and forth to score and section the A1 pulley proximal and distal. The loss of a gritty sensation, as the pulley was cut, is to indicate and confirm completion of the release.



Figure (2): gauge needle is introduced percutaneously perpendicularly.

After percutaneous release, the needle was withdrawn and the patient was asked to actively flex and extend the finger several times to confirm complete release of the triggering. If a patient demonstrate continued triggering, the needle was reinserted an additional release performed. Clinical release is defined as the relief of active triggering immediately after percutaneous release (Fig. 3)



Figure (3): After percutaneous release.

An adhesive tight bandage was applied. The patient was instructed to use the hand for activities as tolerated. The patient was able to remove the dressing themselves the next day.

Postoperative

After the operation, the patient was prescribed NSAIDS and antibiotic and anti-edematous for 2 days and were followed up at 2 weeks and then monthly up to 3 months.

Evaluation:

The results were assessed according to the method used by Tanaka et al [13] [58] . at the end of the follow up period of 3 months. The method of evaluation depends on the patient's symptoms elicited on examination.

- Minor symptoms whose score 1 point:
- Swelling.
- Tenderness.
- Minor symptoms whose score 2 points (as they interfere with finger's movement):
- Pain on movement.
- Limitation of motion.
- Major symptoms:
- Snapping.
- Locking.

Statistical analysis:

The data were collected and tabulated using the SPSS (Statistical Package for the Social Sciences) statistical software on an IBM compatible computer. The level of significance was $P < 0.05$.

Results

Thirty nine trigger fingers were treated by percutaneous release patients. There were 26 females and 4 male in the study. The duration of symptoms averages from 6 months up to 36 months. The right hand was affected in 22 patients and left hand was affected in 8

patients .The dominant hand was affected in 19 patients and non-dominant in 4 patients. The thumb was affected 16 times (41%), the middle finger 10 times (25.6%), the ring finger 9 times (23%), the index finger 4 times (10.2%) and the little finger was not affected in any patient. There was multiple finger affection in 7 patients (23.3%) and only one finger affected in 23 patients (76.7%). There were 19 patients without history of systemic diseases (63.3%) and 11 patients with history of diabetes mellitus (36.7%) in the study.

The final results at the end of this study were satisfactory (excellent, good) in 96.7% of patients and unsatisfactory (poor) in 3.3% of patients.

Regarding complications, 5 patients had swelling treated by anti-edematous for one week. One patient had numbness treated by neurotonics for one week and three patients had swelling and pain on movement relieved by steroid injection. Only one developed recurrence treated by open surgical release.

Discussion

There are different methods for treatment of trigger finger. These methods can be divided into two groups: the nonoperative management as simple splinting, oral non-steroidal anti-inflammatory drugs, corticosteroid injection and surgical treatment as open surgical release and percutaneous release.

One recent study in the Journal of Hand Surgery suggests that the most cost- effective treatment is two trials of corticosteroid injection, followed by open release of the first annular pulley. [14]

Open surgical division of the A1 annular pulley in the triggering digit has been the standard of treatment in protracted cases. However, complications after open release could be quite frequent and serious as previously reported by Carrozzella [9] Scar tenderness, wound infection and finger stiffness are the potential complications. The percutaneous surgical release (PR) technique performed by Eastwood et al.[15] as a convenient, cost- effective method with a low complication rate, is becoming more popular than open surgery. [15] The ones who suggest PR aim to decrease the complications that can be seen with open surgery, such as infections, painful scar formation, bowstringing of the flexor tendons due to pulley injuries, joint stiffness, weakness and digital artery or nerve damage.

In this study, there was multiple finger affection in 7 patients (23.3%) and only one finger affected in 23

patients (76.7%). There was no correlation between the outcome and multiple finger affection. Saremi et al[16] . reported that percutaneous release is a safe and effective treatment for trigger fingers even if multiple fingers are involved. He showed that postoperative duration of pain was significantly different and the period of painkiller use was also different between single and multiple finger affection, in which it was longer with multiple finger affection[16] .

The percutaneous technique offers the advantage of being less invasive and therefore minimizes the risk of these problems.

Conclusion

The percutaneous release of trigger finger is a simple, safe, cost, effective, easy to perform and reliable method with low complication rate.

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