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Percutaneous Release of Trigger Finger by Needle Technique

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Abstract

Trigger finger may be treated in a variety of ways, both conservative and surgical. In the early stages, steroid and local anaesthetic injections, as well as the use of a splint, are recommended. Surgical intervention is necessary if the conservative treatment fails or in persistent conditions. As an alternative, percutaneous surgery is already being used. Percutaneous surgery is becoming more popular than open surgery because of its convenience, cost-effectiveness, and low complication rate. An analysis of twenty patients with trigger fingers treated at the orthopaedic surgery department of Benha University Hospital and Suez Insurance Hospital by needle percutaneous release was the study's goal. Twenty patients with trigger finger underwent percutaneous trigger finger releases in a prospective cohort study at Benha University Hospital's orthopaedic surgery department. A total of 13 women and 7 males participated in the research. The average age at the time of the intervention was 52.55 years old (range 43 to 63). The study found that 15% of patients had bilateral thumb fingers, 5% had bilateral ring fingers, 20% had bilateral left ring fingers, and 20% had bilateral right ring fingers in the three patients. Six patients (30%) had diabetes, and one patient (5%) had hypothyroidism in the study. 3 patients (15%) were found to have Right De Quervan syndrome, while 2 of the 3 patients (10%) with Bilateral Carpel Tunnel Syndrome were also found to have Right Tennis elbow as a co-morbidity. A mean follow-up period of 4.95 weeks, ranging from 4 to 6 weeks, was examined postoperatively in our study, during which time the postoperative follow-up period was reviewed. The disease lasted an average of 1.14 years, ranging from 0.5 to 5 years in severity. According to our findings, 3 patients (15 percent) failed the procedure and required open release, while 17 patients (85 percent) experienced relief. As a result of this study, percutaneous release trigger finger by needle is an effective, convenient, and cost-effective alternative to open surgery.

Key words: Percutaneous Release, Trigger Finger, Needle Technique.

1. Introduction

For the hand surgeon who treats trigger finger patients, it is a prevalent ailment and a frequent complaint. [1] Splinting and rest, steroid injection and surgical release have all been used to treat this condition. [2]

According to the research, conservative therapy has a success rate of between 50 and 92 percent. Splinting the finger, steroid injections, and anti-inflammatory medication usage are among the conservative therapy options.

As a last resort, surgical removal of the A1 pulley has a reported success rate of up to 100 percent [4]. Infection, digital nerve damage, scar pain, and joint contractures are all possible side effects after surgical release [5].

Since its inception in 1958, percutaneous release has been claimed to have a success rate of up to 100% without any problems.

When conservative therapy fails, percutaneous A1 pulley release is the treatment of choice, with the benefits of minimal complication rates, simplicity of administration, and high patient satisfaction [7].

An analysis of twenty patients with trigger fingers treated at the orthopaedic surgery department of Benha University Hospital and Suez Insurance Hospital by needle percutaneous release was the study's goal.

2. Patients and Methods

The study includes twenty patients chosen from attending Benha University Hospital and Suez insurance hospital with trigger finger. There were 7 males and 13 females. The age of the patients ranged from 43 to 63 years, The Mean of age was 52.55 y. Regarding the side affected 5 patients was left trigger finger, 11 patients was right trigger finger, 4 patients was bilateral trigger finger. The follow up period from 6m to 1.5 year. There were 17 patients with dominant right hand and 3 patients were dominant left hand. 10 patients were hard worker, 6 patients were sedentary life and 4 were official worker.

Study design:

Study location:

- A prospective study was conducted at Orthopedic Surgery Department, Faculty of Medicine, and Benha University and Suez insurance hospital.

Study population:

- The study includes twenty patients with trigger finger who admitted and managed in the study hospital by percutaneous trigger finger releases.

Sample size:

- Twenty patients chosen from attending Benha University Hospital and Suez insurance hospital with trigger finger.

Inclusion criteria:

Age group: adult different patient with different causes.

Exclusion criteria:

- skin contractions (burn, psoriasis)
- previous fractures
- previous surgery
- previous release
- Infection.

Patient Evaluation:

History: careful history taken for all patients and included

- Personal data: age, gender, occupation, etc.
- Special habits of medical importance: e.g. smoking
- Associated co-morbidities: DM, HTN, etc.
- Pre-injury: function and hand dominance.
- History of present illness: side affected, time since injury, previous treatment, sensory and motor power affection in the injured limb, perceived ability to

participate in a structured rehabilitation program, associated injury.

Clinical examination:

Physical exam reveals locking or clicking of the affected finger upon opening and closing the hand, though this may not occur consistently with every finger flexion. Thickening, swelling, or even a tender nodule is typically felt over the MCP joint.

Surgical technique:

Consent:

Standard consent was taken from the patients

Anesthesia:

Local anesthesia.

Position:

The Patient position was supine position in operating room and clinic.

Surgical procedure:

Percutaneous trigger finger releases were performed with a local anesthetic. One milliliter of lidocaine 1% injection was used to anesthetize the skin, the subcutaneous tissues, and the flexor tendon sheath at the level of the A1 pulley. The proper location of the pulley was confirmed using specific surface landmarks on each digit. After waiting several minutes to allow the anesthetic to take effect, the surgeon inserted an 18-gauge needle into the center of the pulley with the digit held in extension (Figure 1), the needle was carefully moved longitudinally along the length of the pulley with the bevel of the needle parallel to the tendon. A grating sensation was felt as the fibers of the pulley were cut. Several needle passes were made until the pulley was felt to have been released. Complete release was determined by loss of the grating sensation along with complete relief of any further. Symptoms of triggering. The puncture site was cleaned and covered with a light sterile dressing, there was no postoperative immobilization, and patients were encouraged to immediately return to normal use of the digit.

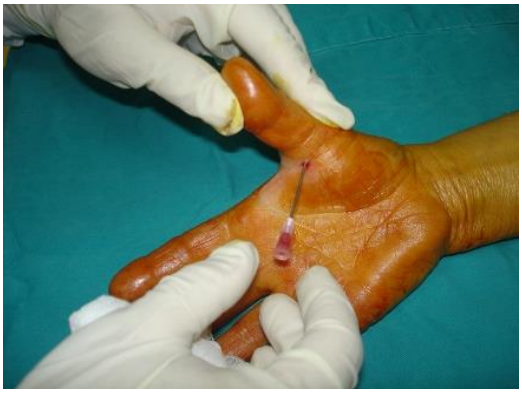

Fig. (1) Insertion of the 18-G needle to release the A1 pulley.

Postoperative Evaluation:

All the patients will be followed up for at least 4 weeks and evaluated clinically.

Statistical Analysis:

Data were collected, coded, revised and entered to the Statistical Package for Social Science (IBM SPSS) version 20. The data were presented as number and percentages for the qualitative data, mean, standard deviations and ranges for the quantitative data with parametric distribution and median with inter quartile range (IQR) for the quantitative data with non-parametric distribution.

3. Results

Table (1) Result among all patients.

		No	%
Result	**Failed needs open release**	3	15.0%
	Relieved	17	85.0%

This table showed that Result of 3 patients (15%) was Failed needs open release, of 17 patients (85%) was relieved

Table (2) Comparison between association and results among all patients.

		Failed needs open release		Relieved		Chi square test	
		No	%	No	%	X^2	P value
Association	**Bil Carpel Tunnel $**	0	0.0%	1	5.9%	20.000	0.010
	Left De Quervan	2	66.7%	0	0.0%		
	Left Carpel Tunnel $	0	0.0%	1	5.9%		
	Rt . Carpel Tunnel $	0	0.0%	2	11.8%		
	Rt . De Quervan	1	33.3%	2	11.8%		
	Rt.Tennis ellbow	0	0.0%	2	11.8%		

This table showed that there were statistically significant difference between association and results among all patients

Table (3) Comparison between complications and results among all patients.

	Relieved		Failed needs open release		Chi square test	
	No	%	No	%	X^2	P value
No complication	14	82.40%	0	0.00%		
Incomplete release of the pulley and persistent tenosynovities	0	0.00%	1	33.30%		
Incomplete release of the pulley with iatrogenic injury of the tendon	0	0.00%	1	33.30%	20	0.001
Lt. digital nerve injery with hypothesia	1	5.90%	0	0.00%		
Rt. digital nerve injery with hypothesia	2	11.80%	0	0.00%		
Persistent tenosynovities	0	0.00%	1	33.30%		

This table showed that 82.4% of relieved cases didn't has any complications so there were statistically significant decrease complications in relieved cases

Case presentation

A.History :

- Female patient 56 years old.

B. Prerelease evaluation :- figure (2, 3, 4)

- Disease : Trigger thumb finger
- Side affected: the Right side
- Concomitant diseases: Diabetes Mellitus
- Time Elapsed between disease and Release 6 months
- Follow up for 5 weeks
- Result :Relieved

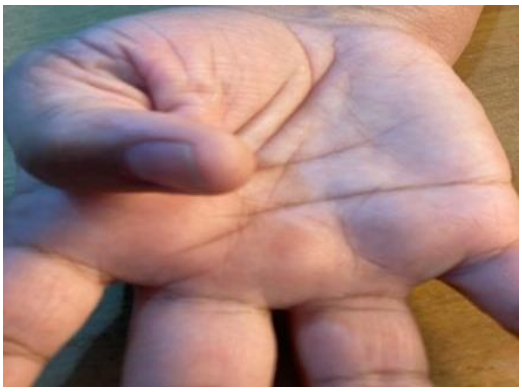

Fig. (2) During examination.

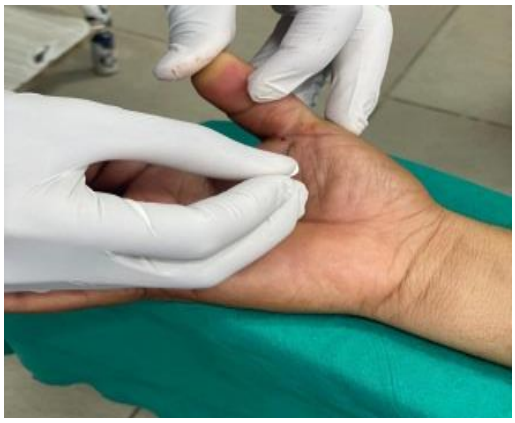

Fig. (3) During percutaneous release.

Fig. (4) After follow up.

A.History :

- Female patient 55 years old.

B. Prerelease evaluation :- figure (5, 6, 7)

- Disease : Trigger index finger
- Side affected: The right side
- Concomitant diseases: NO history of Present illness
- Time Elapsed between disease and Release 6 months
- Follow up for 6 weeks
- Result: failed needs open release

Fig. (5): During examination.

Fig. (6): During percutaneous release.

Fig. (7) After follow up.

4. Discussion

Complications were significantly reduced in 82.4 percent of alleviated instances as compared to all patients' findings.

Insufficient release, tendon laceration, bowstringing, infection, stiffness, weakening, and a digital artery pseudo aneurysm are only a few of the problems associated with percutaneous trigger thumb release. [8]. There have also been reports of digital nerve damage in the percutaneous release of trigger fingers. [9]

Three patients (15 percent) were determined to have failed and need open release, whereas 17 patients (85 percent) were found to have been eased as a consequence of our research. Tenosynovitis, iatrogenic tendon damage, and partial trigger finger release owing to inexperience are the main reasons for percutaneous trigger finger release failure in our research. According to Sahu R. et al. [10], who conducted a similar research, 82.6 percent (38/46) of patients had great outcomes, 13.1 percent (six/46) had good outcomes, and 4.3 percent (2/46) had bad outcomes, all in keeping with our findings. Just after surgery, 82.6 percent (38/46) of patients had complete pain relief, 13.0 percent (6/46) had partial pain reduction, and 4.3 percent (2/46) had no pain relief at all, according to the results. Triggering did not occur again. Following surgery, patients who just had PR were able to resume to their normal activities three days after surgery on average, according to the results of a research by Uçar R. et al. [11]. (1-5 days). Patients in the control group returned to their normal routines after a seven-day recovery period (4-11 days). When it came to returning to everyday activities, there was a statistically significant difference between the two groups (P 0.001).

As a severe consequence of percutaneous release, nerve injury (PR). The patients in our research did not experience this problem. A total of 185 PR operations were performed by Ha KI et al. [12]. There were no reports of problems. In their 63 PR patients, Amrani et al. [13] found no problems, however there were two recurrences. According to Pope et al. [14], PR may have missed 10-15 percent of the region distal to the pulley.

The standard of care in extended instances has been open surgical division of the A1 annular pulley in the triggering finger. However, as Thorpe et al. have previously shown, open-release problems may be extremely common and devastating. [15] Tenderness of the scar, infection of the incision, and rigidity of the fingers are all possible side effects. Eastwood et al[16] .'s percutaneous surgical release (PR) procedure is becoming more common than open surgery because of its convenience, cost efficiency, and low complication rate. Many of the problems associated with open surgery, such as infection, severe scarring from pulley injuries, bowstringing of the flexor muscles, joint stiffness and weakness, and digital artery or nerve injury, are addressed by those who advocate PR. The percutaneous approach is less intrusive, which reduces the chance of these complications. These findings are consistent with previous publications.

However, percutaneous release surgery was discouraged for individuals with locked fingers or tenosynovitis, as reported by Bain et al. [17]. Flexion contracture may be seen in situations with chronically locked fingers. In this situation, open surgery is a must, and hand rehabilitation is necessary immediately after open surgery.

Open vs percutaneous approaches have been the subject of some research. Wang HC [18] compared 32 open surgical cases and 40 PRs in a retrospective research. There were no statistically significant changes in clinical outcomes. The findings indicated that public relations (PR) is a viable alternative to the open distribution of software. In his long-term comparison investigation, Gilberts EC [19] found that both strategies produced excellent outcomes.

5. Conclusion

Because of its low complication incidence, percutaneous trigger finger release by needle is a more practical and cost-effective alternative to open surgery.

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