

Percutaneous Release of Trigger Fingers: Is it reserved for a few Surgeons?

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Abstract

Symptomatic trigger fingers are painful and disabling. When conservative management fails, surgery is the treatment of choice. Percutaneous release of trigger finger was performed in 38 patients as an out patient clinic procedure using a # 11 blade in the Department of Physical Medicine and Rehabilitation with 84.2% success. Haematoma, infection of tendon sheath and hypoaesthesia due to injury to the digital nerves were the complications encountered. The technique is simple, reliable and effective.

Introduction

Stenosing tenosynovitis is a group of conditions in which there is a mismatch between the size of the tendon sheath and the tendon which passes through it. The trigger finger, a type of stenosing tenosynovitis, is caused by a nodule or thickening of the flexor tendon which catches on the proximal edge of the first annular pulley (A1) when the finger is actively flexed¹. When severe, finger may lock in flexion, requiring the patient to use the other hand to release the finger. The catching and locking is often painful and interfere with hand activities. Though the natural history indicates a self limiting disease², a prompt treatment is often required to relieve pain and also to lessen the interference in activity. Local injection of steroid is often recommended^{3,4,5}. Although injection is simple with low morbidity, this has a high rate of failure and repeated injections may be required⁶. When conservative treatment fails, open release of A1 pulley is usually recommended⁶. To reduce morbidity and cost of open release method and also to permit out

patient surgery in clinics, subcutaneous release of the trigger finger using a #11 blade have been tried and the results are reported here. Not many reports on this procedure are available in the country.

Material and methods

Patients of trigger finger(s) who attended the Department of Physical Medicine and Rehabilitation, Regional Institute of Medical Sciences since January 2000 were the study population. So far, 152 patients have been enrolled till December 2001. Patients who had been treated earlier with surgery, had history suggestive of infection following local injection, systemic diseases like diabetes, hypertension, excessive subcutaneous tissue, fixed trigger finger, local infective problems were excluded from this study. Patients who had been treated earlier for more than 4 months with NSAID, local steroid injection (minimum of two injections) and physical therapy like ultrasound therapy, but failed to produce a functional recovery were eligible for the study. Thus 38 patients were included in this study out of 152 patients. Subcutaneous releases of the trigger finger were performed in these 38 patients. However, disease characteristics were also being described here for the whole study population to compare with other series.

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Operation was conducted under peripheral nerve blocks (28 patients) or local anaesthetic infiltration (10 patients) with 2% lignocaine without a tourniquet. Involved hand was cleaned with antiseptic solutions. Trigger nodule was identified. Finger was hyper extended to displace neurovascular bundles to the sides on the dorsal aspect. A # 11 blade was inserted just distal to the nodule and cutting was done and free movement of the finger was checked. In release of trigger fingers, dissection of A1 pulley proceeds from proximal to distal. In case of trigger thumbs, the entry point of incision is just distal to the nodule over the proximal phalanx, and division of annulus proceeds proximally⁷. A grating sensation could be felt as the knife cuts through the horizontal fibers of A1 pulley. This grating sensation ceases when the pulley is completely divided. When the knife does not move with the flexion of the finger tip, it indicates adequate depth of the blade. If there was residual catch, the same procedure was repeated until flexion/extension movement of the finger was free. A compression bandage was put for about 8 hours. Then, the bandage was replaced by a water proof band aid and active movement of the finger started. Actual operative time was less than 1 minute. Patients were reviewed on the next day and checked for the free movement of the finger, sensation and other post operative complications like bleeding, hematoma, etc.

Here we are reporting the results of the first six months follow up with three contacts at one week, three months and six months. Follow up is still continuing. Results were recorded as complete relief when there were no symptoms and complications; partial relief when there were residual symptoms in the form of triggering or pain or complication less disturbing than the previous symptom; and no relief when no improvement in symptoms or more disturbing complications than the previous symptoms were present.

Results

There were 14 males and 138 females who had trigger fingers. Among the 38 patients who underwent surgery, there were 4 males and 34 females. Distribution of the trigger digits are shown in table 1. Thumb was most commonly involved followed by middle finger. Peripheral nerve block was partial in 6 cases. Complications due to local anaesthetic were not reported. Local anaesthetic infiltration frequently distorted anatomy thereby causing difficulty in locating the nodule.

Thirty two patients got complete relief and another four got partial relief. Two patients had no relief with surgery. Three patients with partial relief and another 2 patients with no relief were seen amongst trigger thumb patients. Post operative complications like hematoma (1), infection of the tendon sheath (2 cases) and hypoesthesia due to injury of digital nerves of thumb (2 cases) were encountered.

Four patients (3 partial and 1 complete reliefs) developed symptomatic trigger finger within 2-5 months. They were treated with open release. Adhesion was noted in 2 cases, incomplete release in 3 and a distal nodule in one case.

Table 1. Distribution of digits among 152 patients.

<i>Fingers/Digit</i>	<i>Side of trigger digit/finger</i>		<i>Total</i>
	<i>Right</i>	<i>Left</i>	
Thumb	45	46	91
Index	6	6	12
Middle	38	30	68
Ring	4	0	4
Little	5	1	6

Table 2. Treatment outcome of 38 patients.

<i>Outcome</i>	<i>Number of patients</i>	<i>Percentage</i>
Complete relief	32	84.2
Partial relief	4 (all thumbs)	10.5
No relief	2 (all thumbs)	5.3

Discussion

The aetiology of stenosing tenosynovitis is unclear, but a repetitive trauma does appear to play a role¹. Sampson⁸ found fibrocartilage metaplasia on the inner surface of the A1 pulley which was the cause of the triggering. A tendon nodule, as a bunching up of the spiral fibers of the flexor tendons at the site of constriction in the fibrous flexor sheath may be found⁹. It is most common in the ring and long fingers and rare in index finger¹. Sanjib¹⁰ reported that thumbs and ring fingers are most frequently involved. This present series showed thumbs as the commonest digit involved followed by middle finger and ring finger. Surgical release has good success rate of 83% but significant complications have been noted¹¹. If finger is locked in flexion or extension, open release is the choice¹². Several techniques for percutaneous release of the A1 pulley have been described with satisfactory results and few complications. Sanjib¹⁰ reported 73.5% complete relief with percutaneous release using a 21 gauge hypodermic needle similar to that described by Eastwood et al⁹. However, Ha¹³ pointed out that the needle bent easily and the tip did not readily divide a thickened pulley. Satisfactory results with complete relief of triggering were achieved in 93% of the digits using a specially designed Korean HAKI knife¹³ without any nerve injuries in 185 digits including 79 thumbs. In the present study complete relief was noted in 84.2%. Ha¹³ recommended that a patient with acute triggering is probably best managed by an injection of steroid but when it fails, percutaneous release is the treatment of choice. Several authors have indicated that the proximity of the digital nerves in the thumb poses a considerable risk of injury when the percutaneous technique is used^{9,14,15}. Sanjib¹⁰ reported a high chance of digital nerve injury (37%)

in thumb. At the same time, Thorpe AP¹¹ reported that digital nerve injury is the most frequently reported complication of the trigger finger release by open method. We came across 2 patients with hypoesthesia following the procedure. However both the patients regain normal sensation within 3 months. Injury to flexor tendon has also been described as a complication of the percutaneous technique^{9,12,14}. We tried to avoid this complication by cutting the A1 pulley only after checking absence of mobility of the knife during movement of the finger. Routine use of a tourniquet is not required because blood loss due to this procedure is very minimal. The procedure is best performed under peripheral nerve block(s) because local infiltration often distorts anatomy.

Conclusion

A physiatrist who failed to relieve trigger finger by all conservative measures should go for percutaneous release unless there are contraindications. This procedure that gives an instant result is not so difficult to be reserved only for the experienced and careful hand surgeons. The advantages of this procedure like reduced morbidity, low cost and an OPD procedure should be made available to all physiatrists without fear. This procedure is simple, reliable and effective.

References

1. Robert B. Duthie, George Bently. Mercer's Orthopaedic surgery. 9th edn. London: Arnold; 1996.
2. Schofield CB, Citron ND. The natural history of adult trigger thumb. *J Hand Surg* 1993;18B:247-248.
3. Marks MR, Gunther SF. Efficacy of cortisone injection in treatment of trigger fingers and thumbs. *J Hand Surg [Am]* 1989;14:722-729.
4. Murphy D, Failla JM, Koniuch MP. Steroid versus placebo injection for trigger finger. *J Hand Surg [Am]* 1995;20:628-631.

5. Newport ML, Lane LB, Stuchin SA. Treatment of trigger finger by steroid injection. *J Hand Surg* 1990;15:748-750.
6. Benson LS, Ptaszek AJ. Injection versus surgery in the treatment of trigger finger. *J Hand Surg* 1997;22-A:138-144.
7. Avrum I. Froimson. Tenosynovitis and tennis elbow. In: David P. Green (editor). *Operative Hand Surgery*. Third Ed. Vol 2. New York: Churchill Livingstone;1993 p.1989-2006.
8. Sampson SP, Badalamente MA, Hurst LC, Seidman J. Pathology of the Human A1 pulley in trigger finger. *J Hand Surg* 1991;16A:714-721.
9. Eastwood DM, Gupta KJ, Johnson DP. Percutaneous release of trigger: an office procedure. *J Hand Surg* 1992;17:114-117.
10. Sanjib W, Kumar R, Kumar S. Percutaneous release of trigger digits. *I JS* 1998; 60(1):27-28.
11. Thorpe AP. Result of Surgery of trigger finger. *J. Hand Surg* 1988;13B:199-201.
12. Patel MR, Moradia VJ. Percutaneous release of trigger digit with or without cortisone injection. *J Hand Surg* 1997;22:150-155.
13. Ha KI, Park MJ, Ha CW. Percutaneous release of trigger digits : a technique and results using a specially designed knife. *J Bone Joint Surg* 2001;83-B:75-77.
14. Bain GI, Turnbull J, Charles MN, Roth JH, Richards RS. Percutaneous A1 pulley release: a cadaveric study. *J Hand Surg* 1995;20:781-784.
15. Pope DF, Wolfe SW. Safety and efficacy of percutaneous trigger finger release. *J Hand Surg* 1995; 20: 280-283.