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Original Article

Percutaneous Trigger Finger Release as an Outpatient Procedure: Our Initial Experience at Jos University Teaching Hospital

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ABSTRACT.

Trigger finger or stenosing tenosynovitis, is a common hand disorder. It is a tendinopathy that affects the digital flexor tendon sheath. It can be treated via open and percutaneous surgical methods. Aim: To report our experience with percutaneous trigger finger release as an outpatient procedure and its mid-term outcomes. Materials and Methods: Our study was conducted on 33 trigger fingers in 30 patients with mechanical symptoms of triggering. Patients were diagnosed, and consent was given. After cleaning, a 21-gauge hypodermic needle was inserted through the skin, confirmed by observing the needle's swing, and the A1 pulley was released. All patients were reviewed at six weeks and 12 weeks. Results: We treated 30 patients with 33 trigger fingers. There were 27 women and three men, with a mean age of 49 (range, 39 to 67 years). The success rate with this technique was 100% in the 33 digits treated. The fingers were completely free of triggering (grade 0) at 6-weeks of surgery, at 12 weeks of surgery, there was no recurrence. Discussion: In our study, we found that percutaneous trigger finger release can be conveniently carried out in the clinic office. In 100% of our patients, there was complete relief from their symptoms; this result is in concordance with the best outcomes obtained in other studies. There was no complication after 12 weeks. Conclusions: Percutaneous surgery is one cost-effective and efficient way to manage trigger finger in an outpatient setting.

Keywords: Percutaneous release, Trigger finger, midterm, outcome, trigger finger

INTRODUCTION

Trigger finger or stenosing tenosynovitis is a common tendinopathy which affects the digital flexor tendon sheath.[1] It is frequent in adults, affecting the thumb and ring finger of the dominant hand[2]. The triggering is caused by swelling and thickening of the synovial covering of the tendon or because of the thickening of the fibrous sheath through which the tendon glides. Treatment options include orthosis, physical therapy, nonsteroidal anti-inflammatory drugs, corticosteroid injections, and surgical release.[3] If identified early, that is, less than six months after the onset of symptoms, NSAIDs and other conservative measures can effectively treat the triggering.[4,5] Surgical release, which can be open

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or percutaneous, is indicated in cases with long-standing symptoms or failed conservative management. The open release allows full visualisation of the A1 pulley and, therefore, is associated with a high success rate and is done as a day-case procedure in the operating theatre. However, it is froth with complications such as infection, digital nerve injury, stiffness, and scar tenderness. . In contrast, percutaneous release can be done in the clinic with a similar high success rate as the open procedure with few complications.

Percutaneous trigger finger release has gained attention as a minimally invasive procedure for the treatment of trigger finger disorder. Several studies have demonstrated the effectiveness and safety of percutaneous trigger finger release[5-9]. It has been reported that percutaneous trigger finger release can be performed on all digits, including the thumb, small fingers, and index fingers, with high patient satisfaction rates[10,11]. The procedure is considered cost-effective and provides immediate relief from symptoms, with a low rate of complications when performed by an experienced Orthopaedic surgeon[7,12]. Additionally, percutaneous trigger finger release under local anaesthesia is highlighted as a minimally invasive procedure that can be performed in an outpatient setting, emphasizing its convenience and patient-friendly nature[10].

However, it is important to note that there are also considerations regarding the technique and potential complications associated with percutaneous trigger finger release. While percutaneous release is advocated as an alternative to open release, some studies have highlighted the importance of experience and technique in ensuring the success of the procedure, as inexperience can lead to complications such as tenosynovitis, iatrogenic tendon damage, and partial trigger finger release.[13] Furthermore, a study reported that insufficient release was obtained in severe cases, requiring multiple releases, indicating the need for careful patient selection and consideration of the severity of the condition.

In comparison with open release, percutaneous trigger finger release may have limitations in terms of exposure and potential for iatrogenic neurovascular injury, suggesting that the choice between the two techniques should be carefully considered based on individual patient characteristics and the specific requirements of the case[14]. In this study, we report our experience with the percutaneous trigger finger release as an outpatient procedure and its mid-term outcomes.

MATERIALS AND METHODS

A prospective study was performed on 33 trigger fingers in 30 patients. This study was conducted at the Jos university Teaching hospital Jos Plateau State, over a 2-year duration from January 2022 to January 2024. Patients were included in the study if they had mechanical symptoms of triggering of a digit that could be confirmed on clinical examinations and located in the region of the A1 pulley with grade 2, 3 and 4 using Quinnell's criteria table 4. Patient with grade 0 and 1 using the Quinnell's criteria were excluded.[15] Once the clinical diagnosis was confirmed and consent obtained, in the outpatient clinic, the palmer skin is cleansed with methylated spirit and painted with povidone-iodine, and 3mls of 2% plain undiluted lignocaine is injected around the A1 pulley.

The finger is held hyperextended and a 21-gauge hypodermic needle tip is inserted through the skin to the proximal end of the A1 pulley into the flexor tendon. Needle placement is confirmed by observing the paradoxical swing of the needle on gentle flexion of the finger. Needle positioning is verified by observing the needle's paradoxical swing when the finger is gently flexed. Retract the needle tip until it is completely outside the flexor tendon. The needle's position can be further determined by aligning the bevel parallel to the flexor sheath and sensing a gritting sensation under the pulley.[2] The pulley is divided by a gentle but firm back-and-forth action from distal to proximal. Complete release is ensured at the end of the procedure by full active flexion and extension. An adhesive dressing with povidone iodine is applied at the puncture site, and the patient is prescribed a 3-day course of a nonsteroidal anti-inflammatory analgesic. All patients were reviewed at six weeks and 12 weeks and graded.

Image 1 Showing the 21-gauge needle in the tendon.

Image 2 Showing the Surgeon's hand using the back-and-forth movement to cut the A1 pulley

RESULTS

A total of 33 trigger fingers in 30 patients were treated. There were 27 women and 3 men, with a mean age of 49 (range, 39 to 67 years) and a female-to-male ratio of 10:1. Triggering of the thumb was most common, followed by the index finger and the middle finger, as seen in table 3. One of the patients with diabetic mellitus had release of four diseased fingers., and all the four fingers were released percutaneously at the same sitting. Another patient presented with a recurrence 14 year post open surgery and was released percutaneously.

All the 33 digits (100%) treated by this technique were completely free of triggering (grade 0) at 6-weeks of surgery. At 12 weeks, there was no recurrence. At presentation, 30 of the trigger digits had some degree of pain associated with the triggering. This pain was completely relieved in all the patients.

No complications occurred during or after the procedures. All patients fully recovered from the sensation of catching, locking, and pain.

Table 1: Age distribution of participants

Age Group	Frequency (f)	Percent (%)	Mean ± SD	Min	Max
< 40	2	6.7	48.9 ± 5.4	39.0	67
40 - 49	15	50.0			
50 - 59	10	33.3			
≥ 60	3	10.0			
Total	30	100.0			

Table 2: Distribution by Sex

Sex	Frequency (f)	Percent (%)
Female	27	90.0
Male	3	10.0
Total	30	100.0

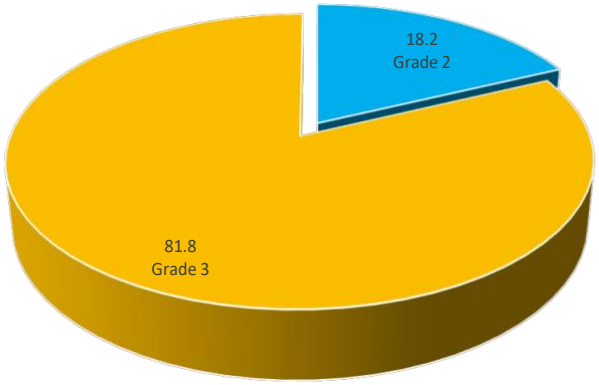

Figure 1: Grading of the Trigger finger using Quinnell's Criteria

Table 3: Distribution of the Fingers

Finger	Frequency (f)	Percent (%)
L1	4	12.1
L2	3	9.1
L3	2	6.1
L4	2	6.1
R1	6	18.2
R2	10	30.3
R3	4	12.1
R4	2	6.1
Total	33	100.0

L Left, R right, 1 Thumb, 2 Index finger, 3 Middle finger, 4 Ring Finger, 5 Little finger

Table 4. The Quinnell grading of trigger finger.

Grade Clinical findings (during flexion and extension)
0 Normal movement
I Uneven movement
II Actively correctable
III Passively correctable
IV Fixed deformity

DISCUSSION

The treatment of trigger finger is evolving, both surgeon and patient are looking for the best possible way to treat it with cost-effectiveness and reduced complications. The available treatment options span from injection of steroid, splinting, percutaneous release to open surgical release. Debates regarding the superiority of the open versus percutaneous method have persisted for years.[16] Both sides have published their studies, but neither technique's superiority has been confirmed.[15] Traditionally, open surgery involves cutting the A1 pulley through a longitudinal or transverse incision. This approach has been around for a long time.[17-19] Eastwood described the percutaneous surgical release procedure as a convenient, cost-effective, and low-complication treatment gaining popularity over open surgery.[15,20,21]

Advocates of percutaneous surgical release aim to minimise the negative outcomes linked to open surgery. Another advantage is that the procedure can be done on the same clinic visit. This makes it a convenient and an attractive treatment option, however, the procedure is not commonly offered as a treatment alternative in our environment. Our experience with percutaneous release of trigger finger revealed that percutaneous trigger finger release can be carried out as an outpatient procedure in the same clinic visit, this makes it both convenient and economical considering our poor resource setting. In this study 100% of our patients had complete relief from their symptoms; this result is in line with the best outcomes obtained in other studies.[19,21] The procedure was easily carried out without any problems as described by Eastwood[15].

In this study 81.8% fingers were grade 3 while 18.2% had grade 2 trigger finger using the Quinell's criteria. There was no grade 4, and grades 0 and 1 were excluded from the study. All our fingers were completely released in our study this is similar to a study by Ricardo Montreal who had 94.4% complete release to grade 0 and only one with grade 4 was incompletely release[22]. We had complete release to grade 0 in this study probably because we had no finger with grade 4 trigger finger.

In this study there were no complications like infections, painful scars, bowstringing of flexor tendons, joint stiffness, weakness, and damage to digital arteries or nerves at 6 weeks and 12 weeks. Our findings are similar to Ha KI findings where he reported no issues from their 185 Percutaneous Release procedures. Amrani found no complications but two recurrences in their 63 Percutaneous Release cases. According to Pope 10-15% of the area distal to the pulley may not have been divided by Percutaneous Release.[20,21,23] In this study we ensured the distal part of the pulley was divided by ensuring no grit sensation was felt distally. We also used this technique to release trigger thumbs and had no complications.

In a study by Eastwood, they were hesitant to use this technique for the thumb due to the neurovascular bundles' anterior position and proximity to the Al pulley. Still, they released three thumbs, fortunately without complications.[15] In another study, Tanaka, used a percutaneous trigger digit release method on 116 thumbs produced outstanding results in 80% of cases. Given that their cure rate in the fingers was only 49%, they believed their technique was especially indicated in the thumb.[24] Nerve injury as a serious consequence of Percutaneous Release has yet to be reported.

Lorthioir first reported the surgical subcutaneous release of the trigger finger using a tenotome in 1958. Although he made impressive claims about the results, he remained silent about the possibility of digital nerve damage when using a tenotome blade. However, the chances of nerve injury with a tenotome are high because of its size. There were no instances of nerve damage in our study, and we believe the likelihood of it happening is lower when a needle tip is used for the release.[25]

CONCLUSION

The percutaneous surgical approach for treating the trigger finger is a safe alternative to open surgery. In this study, we demonstrated the clinical success of the percutaneous method as an outpatient clinic procedure. When done correctly, it is a convenient and cost-effective approach with a minimal risk of complications. We recommend percutaneous trigger finger release of the Al Pulley using a needle at the outpatient clinic.

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