Original Article

Percutaneous Surgery: A Safe Procedure for Trigger Finger?

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Abstract

Background: Trigger finger is relatively common problem among hand disorders. There are open and percutaneous surgical methods for the treatment. **Aim:** This study was designed to examine the mid-term results of the percutaneous surgical technique on patients with chronic trigger finger. **Materials and Methods:** We included 48 trigger fingers of 48 patients (36 females and 12 males). They were between the ages of 42-68 years (mean age, 52 years). We performed release of the trigger finger by using a 14-gauge needle via the percutaneous technique. We performed open surgery on the trigger fingers of 20 patients in order to evaluate the results obtained from percutaneous surgery. The patients were followed for 30 months on average (18-46 months) following the procedure. **Results:** Following the procedure, pain and locking of the fingers were resolved completely. On the fingers that had open surgery, we observed that the release of the pulley was successful. Only 2 patients had minor abrasions, without any tendon injury. During the follow-up period, no complications were reported in either of the patient groups. **Conclusions:** Percutaneous surgical technique in the treatment of trigger finger is an effective, convenient and cost-effective method with a low complication rate, and is therefore a preferable alternative to open surgery.

Keywords: Percutaneous release, Trigger finger, Surgical techniques Text

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Introduction

Trigger finger is relatively a common problem among hand disorders. The primary pathology is the discordance between the diameter of the flexor tendons of the finger and the fibro-osseous canals in which those tendons lie, which will lead to limitation of the tendon function necessary for hand movement. When the finger is flexed, catching or locking occurs. Left untreated, this may cause flexion contracture of the proximal interphalangeal joints.[1]

There are various conservative and surgical methods for the treatment of trigger finger. Steroid and local anesthetic injection, and splint application are recommended in the acute stage.[2-6] In case of failure of the conservative approach, or in chronic cases, surgical intervention is required.[7-9] Nonetheless, percutaneous surgery is currently being used as an alternative method.[10-13] Percutaneous surgical technique, as a convenient, cost-effective method with a low complication rate, is becoming more popular than open surgery. In this prospective study, we will present the mid-term results following percutaneous release (PR) treatment for trigger finger. We will also report the results of the patients who had open surgery following PR in order to examine the effectiveness and complications of PR.

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Materials and Methods

After approval from ethics committee of Dicle University Medical School was obtained, PR was performed in 48 chronic trigger finger cases (36 females and 12 males with a mean age of 52 years). Thirty-eight patients had involvement in the dominant hand. Twenty-one patients had thumb involvement. Seven had involvement detected in their second finger, 8 in their third finger, 10 in their fourth finger and 2 in their fifth finger. PR was performed as in the description of Eastwood *et al*.[10] A 14-gauge needle was used in our procedures [Figure 1].

After puncturing the skin, the needle was advanced until it was located in the tendon, as confirmed by paradoxical movement of the needle with flexion of the digit. The needle was then withdrawn slightly and moved proximally and distally to release the pulley. The pulley was deemed to be released when there was no more grating sound, and the needle moved freely. Our procedure is the most commonly used technique for percutaneous surgery.

After informed consent was obtained and the protocol was explained, 20 patients were taken to open surgery in the order in which they were presented to our clinic for the examination of PRs performed on them. We called control group for these cases. In the control group, 6 patients had involvement in the first finger, 4 in the second finger, 4 in the third finger, and 6 in the fourth finger. In open surgery, we checked whether there was any laceration around the surrounding tissue and whether the A1 pulley was released adequately or not. Patients were followed for 30 months (18-46 months) on average, after the surgery. Clinical evaluation was based on their return to daily activities, recovery from the pain or the catching sensation of the finger.

Statistics study

Independent samples *t* test was used to statistically compare the returning time for the daily activities of the two groups.

Results

No complications were encountered in or after the surgeries. All patients recovered from the catching sensation, locking and pain. Patients who only had PR returned to their daily activities 3 days after the surgery on average (1-5 days). Patients in the control group took 7 days to return to their daily activities (4-11 days). There was a statistically significant difference between the two groups for return to daily activities ($P < 0.001$). No complications, such as infection, digital artery, nerve injury, recurrence or stiffness of the operating site, were reported. On the fingers that also had open surgery, we observed that the release of the pulley was successful with no injuries. Only 2 patients (10%) had minor abrasions. No complications were detected during the follow-up of these patients.

Figure 1: Percutaneous release technique.

Discussion

Arguments over the superiority of open versus the percutaneous method have been going on for years. Both sides have had their own studies published, yet the superiority of either technique is yet to be confirmed.[7-13]

Traditional open surgery is performed by cutting the A1 pulley via a longitudinal or transverse incision. This technique has been used for a long time.[7-9] The percutaneous surgical release technique performed by Eastwood *et al*.,[10] as a convenient, cost-effective method with a low complication rate, is becoming more popular than open surgery.[10-13] 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.

Lange-Riess *et al*.,[14] in their open surgery series for 305 trigger finger cases reported only a total of 9 complications, including 2 superficial wound infections, 1 delayed wound healing, and 6 temporary digital sensory losses. In their 14-year follow-up period, no permanent complications were detected. Will *et al*.[9] performed a total of 78 open surgeries for the trigger fingers of 43 patients. They reported 3% of major complications (synovial fistula, arthro-fibrosis) and 28% of minor complications (erythema, scar tissue stiffness, and loss of range of motion).

Ha KI *et al*.[12] reported no complications after their 185 PR procedures. Amrani *et al*.[11] reported no complications, but 2 recurrences in their 63 PR cases. Pope *et al*.[13] reported that 10-15% of the area distal to the pulley may not have been cut by PR.

There are also cadaveric studies suggesting that the pulley may not be able to be released adequately and the flexor tendon can be injured.[15,16] Cadaveric studies may not be useful, however, as cadaveric tissue has no nodule that can guide the surgeon and cadaveric connective tissue has different properties from living tissue. In our study, we observed that the A1 pulley was completely released in all our control group patients.

There are some studies comparing open and percutaneous methods.[17,18] Wang HC performed a retrospective study comparing 32 open surgical cases and 40 PRs. No statistical clinical differences were detected. The results suggested that PR is a satisfactory alternative to open release. Gilberts EC[18] in his long-term comparative study indicated outstanding results for both techniques.

Nerve damage as a major complication of the PR has not been reported to date. We did not have this complication in our study patients either.

Conclusion

Percutaneous surgical technique in the treatment of trigger finger appears to be a safe alternative to open surgery. We have shown the clinical success of the percutaneous technique in this study. It is a convenient, cost-effective method with a low complication rate, if performed carefully.

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