Section: Orthopaedics

Original Research Article

COMPARATIVE EVALUATION OF TRIGGER FINGER TREATED WITH PERCUTANEOUS A1 PULLY RELEASE VS OPEN A1 PULLY RELEASE: AN INSTITUTIONAL BASED STUDY

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Received : 12/10/2023
Received in revised form : 05/11/2023
Accepted : 28/11/2023

Keywords:
Trigger finger, Percutaneous, Pully release.

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DOI: 10.47009/jamp.2024.6.1.95

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2024; 6 (1); 487-489

Abstract

Background: The present study was conducted for comparing the results of trigger finger treated with percutaneous A1 pully release vs open A1 pully release. **Materials and Methods:** A total of 40 patients with presence of trigger finger were enrolled. Only those patients were included which have been suffering from past three months and underwent conservative management for the same. Examination of the patients was done both clinically and ultrasonographically. Afterwards, they were randomly and broadly divided into two study groups as follows: Group A patients were managed with percutaneous release of the affected first annular pulley under local anesthesia and without any corticosteroid injection. Group B patients were managed with conventional open surgical release of the A1 pulley. All patients were estimated with the completion of Q-DASH score before and after the procedure. Resolution of triggering was expressed as the "success rate" per digit. **Result:** Mean time of pain killer consumption was 3.1 days among patients of group A and was 3.4 days among patients of group B. Overall, success rate among patients of group A was 92 percent while among patients of group B was 100 percent. Non-significant results were obtained while comparing the mean Quick DASH scores among patients of group A and group B at different time intervals. **Conclusion:** Both methods demonstrated good tolerability; there were no infections, adverse effects, or complaints of ongoing pain.

INTRODUCTION

Trigger Finger is a common condition which may cause significant functional impairment. It is a tenosynovitis in the flexor sheaths of the fingers and thumb as a result of repetitive use. A narrowing of flexor pulley sheaths combined with hypertrophy and inflammation of the tendon/sheath interface causes trigger finger or stenosing tenosynovitis. The inflammation may cause the tendon to become nodular. It most commonly occurs in the ring finger and the thumb but can present in any finger.[1,2]

In trigger finger, inflammation and hypertrophy of the retinacular sheath progressively restricts the motion of the flexor tendon. This sheath normally forms a pulley system comprised of a series of annular and cruciform pulleys in each digit that serve to maximize the flexor tendon's force production and efficiency of motion. The first annular pulley (A1) at the metacarpal head is by far the most often affected pulley in trigger finger, though cases of triggering have been reported at the second and third annular pulleys (A2 and A3, respectively), as well as the palmar aponeurosis.[3,4]

Practitioners' base treatment of trigger thumb on severity and duration of symptoms. Initial treatment entails conservative management and adjunctive pain relief. Common medications for pain relief are nonsteroidal anti-inflammatory drugs such as ibuprofen or naproxen. Conservative therapy consists of several modalities such as rest for three to four weeks, avoiding activities that require repetitive gripping, repeated grasping, or the prolonged use of vibrating hand-held machinery.[5,6] Hence; the present study was conducted for comparing the

ISSN (O): 2687-5365; ISSN (P): 2753-6556

results of trigger finger treated with percutaneous A1 pully release vs open A1 pully release.

MATERIALS AND METHODS

The present study was conducted for comparing the results of trigger finger treated with percutaneous A1 pully release vs open A1 pully release. A total of 40 patients with presence of trigger finger were enrolled. Only those patients were included which have been suffering from past three months and underwent conservative management for the same. Examination of the patients was done both clinically and ultrasonographically. Afterwards, they were randomly and broadly divided into two study groups as follows:

Group A: Patients managed with percutaneous A1 pulley release, and

Group B: Patients managed with open A1 pulley release.

Group A patients were managed with percutaneous release of the affected first annular pulley under local anesthesia and without any corticosteroid injection. Group B patients were managed with conventional open surgical release of the A1 pulley. All patients were estimated with the completion of Q-DASH score before and after the procedure. Resolution of triggering was expressed as the "success rate" per digit. All the results were recorded in Microsoft excel sheet followed by statistical analysis using SPSS software. Chi-square test and student t test were used for evaluation of level of significance.

RESULTS

Mean age of the patients of group A and group B was 41.6 years and 46.7 years of age. Among patients of group A, there were 12 males and 13 females. Among group B patients, there were 14 males and 11 females. Mean time of pain killer consumption was 3.1 days among patients of group A and was 3.4 days among patients of group B. Overall, success rate among patients of group A was 92 percent while among patients of group B was 100 percent. Non-significant results were obtained while comparing the mean Quick DASH scores among patients of group A and group B at different time intervals.

Table 1: Pain killer consumption

Pain killer consumption	Group A	Group B
Mean days	3.1	3.4
SD	1.2	1.3
p-value	0.335	

Table 2: Comparison of success rate

Outcome	Group A		Group B	
	Number	Percentage	Number	Percentage
Success	23	92	25	100
Failure	2	8	0	0
Total	25	100	25	100
p-value	0.125			

Table 3: Comparison of mean Quick DASH score

Mean Quick DASH score	Group A	Group B	p-value
Baseline	44.8	46.2	0.32
2 weeks postoperatively	6.2	7.3	0.28
4 weeks postoperatively	0.3	0.5	0.77

DISCUSSION

The lifetime risk is about 2% to 3%, with women affected more frequently than men. The risk is as high as 10% among people with diabetes mellitus. The ring finger and thumb are most frequently affected. Patients present with symptomatic locking during flexion and extension of the affected digit, as the tendon catches on the stenotic pulley. Operative treatment is also indicated if the digit is locked and not reducible. Surgical management, involving percutaneous or open release of the A1 pulley, has a success rate of nearly 100%. Percutaneous release has gained popularity recently because of benefits that include shorter procedure time and quicker recovery of function. Several randomized controlled trials have shown that percutaneous release is as safe and effective as open release.[7-9] Hence; the present study was conducted for comparing the results of trigger finger treated with percutaneous A1 pully release vs open A1 pully release.

In the present study, mean age of the patients of group A and group B was 41.6 years and 46.7 years of age. Among patients of group A, there were 12 males and 13 females. Among group B patients, there were 14 males and 11 females. Mean time of pain killer consumption was 3.1 days among patients of group A and was 3.4 days among patients of group B. Overall, success rate among patients of group A was 92 percent while among patients of group B was 100 percent. In a similar study conducted by Nikolaou VS et al, authors investigated the effectiveness of ultrasound-guided release of the first annular pulley and compare results with the conventional open operative technique. Two groups were formed; Group A (16 patients) was treated with an ultrasound-

ISSN (O): 2687-5365; ISSN (P): 2753-6556

guided percutaneous release of the affected A1 pulley under local anesthesia. Group B (16 patients) underwent an open surgical release of the A1 pulley. The success rate in group A was 93.75% (15/16) and in group B 100% (16/16). Mean QuickDASH scores in group B were 43.2 preoperatively and, 8.2, 1.3 and 0 after 2, 4, and 12 wk postoperatively. The cosmetic results found excellent or good in 87.5% (14/16) of group A patients, while in 56.25% (9/16) of group B patients were evaluated as fair or poor.[10]

In the present study, non-significant results were obtained while comparing the mean Quick DASH scores among patients of group A and group B at different time intervals. Rojo-Manaute JM et al described sonographically guided A1 pulley release results in terms of resolution of symptoms, safety, and functional recovery. The success rate was 100%, and no cases recurred. Mean times were 1.9 days for taking pain killers, 6.6 days for returning to normal activities, and 9.9 and 3.8 days for complete extension and flexion recovery, respectively. Mean QuickDASH scores were 39.8 preoperatively and 7.8, 1.7, and 0 after 6 weeks, 6 months, and 1 year postoperatively. Grip strength reached greater than 90% of the individual's normal strength by the sixth week in men and by the third month in women ($P < .001$). Radial digital nerve numbness developed in 1 finger, which disappeared by the third week. No other complications were noted. All wounds were cosmetically excellent, and final satisfaction was excellent or good in 98%.[11]

CONCLUSION

Both methods demonstrated good tolerability; there were no infections, adverse effects, or complaints of ongoing pain.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556