



ORIGINAL RESEARCH ARTICLE

Risk factors for ulnar superficialis slip resection

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ABSTRACT

Background: The aim of our study is to investigate the preoperative risk factors of the necessity of ulnar slip resection (USSR) in addition to A1 pulley release in patients with proximal interphalangeal (PIP) joint flexion contracture.

Methods: Patients were divided into two groups. The patients who underwent A1 pulley release in group 1, and patients who underwent USSR in addition to A1 pulley release in group 2. Demographic characteristics, preoperative Visual Analog Scale (VAS), Quick Disabilities Of The Arm, Shoulder, and Hand (qDASH), contracture degree, symptom duration, comorbidities, PIP joint tenderness, comorbidities, postoperative VAS and qDASH score information at the 6th month were obtained from the patient files.

Results: There were 13 male and 31 female patients in group 1 and 7 male and 24 female patients in group 2. The mean age was 61.67 years in group 1 ($p = 0.506$). PIP joint tenderness was present in 27 patients in group 1 and 37 patients in group 2 ($p = 0.717$). The average time from symptom onset to operation was 2.65 months in group 1 and 3.87 months in group 2 ($p = 0.002$). The mean preoperative VAS was 3.34 in group 1 and 4.34 in group 2 ($p = 0.001$). The mean preoperative qDASH score was 21.89 in group 1 and 25.14 in group 2 ($p = 0.926$). Preoperative mean contracture degree was 17.02 degrees in group 1 and 22.18 degrees in group 2 ($p = 0$).

Conclusion: Higher preoperative VAS score, preoperative symptom duration, PIP joint contracture and lower qDASH score lead to the need for USSR. Patients should be informed accordingly and surgery plans should be made accordingly.

ARTICLE HISTORY

Received 20 April 2025

Accepted 26 July 2025

Published 2 September 2025

KEYWORDS

trigger finger; surgery; contracture; hemislip; flexor digitorum superficialis

Introduction

Trigger finger is a common disease that occurs as a result of incompatibility between the size of the flexor tendons and the A1 pulley [1–3]. Conservative treatment options include physical therapy, corticosteroid injections, and orthoses. Success rates (i.e. absence of pain and triggering) with physical therapy management of trigger finger has been reported as 69%, with low recurrence rates [4]. Surgical methods are applied with 90–100% successful results in relieving symptoms in patients who do not respond to conservative treatment methods [5–9].

Proximal interphalangeal (PIP) joint flexion contracture may also develop in people with trigger finger. PIP joint flexion contracture occurs as a result of degenerative widening or shortening of the flexor digitorum superficialis (FDS) tendon [8, 9]. There are few studies investigating the results of surgical treatment in patients with PIP joint contracture. While some studies report that A1 pulley release is sufficient for these patients, some studies report that ulnar slip resection (USSR) is necessary for A1 pulley release [7, 10–15].

Informing patients about preoperative surgical intervention is protective for physicians in malpractice lawsuits. Before surgery if it is predicted which patient will require USSR, patients will be informed in a more detailed and accurate manner and the necessary and adequate preoperative planning will be made. The aim of our study is to investigate the preoperative risk factors of the necessity of USSR in addition to A1 pulley release in patients with PIP joint flexion contracture.

Materials and methods

After ethics committee approval patient files were scanned retrospectively (Eskişehir Şehir Hastanesi Non-Interventional Research Ethics Committee was obtained on April 18, 2024 (Decision No. ESH/BAEK 2024/13). Inclusion criteria: (1) Complete medical records, (2) Preoperative PIP joint contracture of more than 10 degrees, (3) Ages between 18 and 65 years. Exclusion criteria: (1) Incomplete medical records less than 6 months, (2) PIP joint arthrosis, (3) Previous trauma, (4) Dupuytren's contracture.

This study included 75 patients who underwent trigger finger surgery between March 2020 and October 2023. Patients were divided into two groups. There were patients who underwent A1 pulley release in group 1, and patients who underwent USSR in addition to A1 pulley release in group 2. There were 44 patients (13 men, 31 women) in group 1 and 31 patients (7 men, 24 women) in group 2. Demographic characteristics, preoperative VAS, qDASH, contracture degree, symptom duration, comorbidities, PIP joint tenderness, comorbidities, postoperative VAS and qDASH score information at the 6th month were obtained from the patient files.

All surgeries were performed under local anesthesia. After A1 pulley release, patients were asked to do active extension. USSR procedure was performed on patients who could not fully extend their PIP joints, and they were observed to be able to fully extend their joints, and the procedure was terminated. Active and passive flexion and extension exercises were started immediately in both groups.

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Table 1. Preoperative objective and subjective findings of the patients.

Variable	PIP tenderness	Symptom duration	Preoperative VAS score	Preoperative qDASH score	Preoperative contracture degrees
Group 1	27 Patients	2.65 months	3.34	21.89	17.02
Group 2	37 Patients	3.87 months	4.34	25.14	22.18

PIP: Proximal interphalangeal.

Results

Study results are summarized in Table 1. There were 13 male and 31 female patients in group 1, and 7 male and 24 female patients in group 2. The mean age was 61.67 years in group 1 and 66.34 years in group 2 and there was no difference between the groups ($p = 0.506$) (Table 2). In Group 1, the 2nd finger was affected in 4 patients, the 3rd finger in 15 patients, and the 4th finger in 25 patients. In Group 2, the 2nd finger was affected in 2 patients, the 3rd finger was affected in 9 patients, and the 4th finger was affected in 20 patients. There were no patients with affected 5th finger in either group. In group 1, the right hand was affected in 31 patients and the left hand in 13 patients. In group 2, the right hand was affected in 21 patients and the left hand in 10 patients, and there was no significant difference between the groups ($p = 0.802$).

The PIP joint tenderness was present in 27 patients in group 1 and 37 patients in group 2, and there was no difference between the groups ($p = 0.717$).

The average time from symptom onset to operation was 2.65 months in group 1 and 3.87 months in group 2, and there was a significant difference between the groups ($p = 0.002$).

The mean preoperative VAS was 3.34 in group 1 and 4.34 in group 2, and there was a significant difference between the groups ($p = 0.001$). At the 6th month postoperative, the mean VAS was 1.41 in group 1 and 1.5 in group 2, and there was no significant difference ($p = 0.359$).

The mean preoperative qDASH score was 21.89 in group 1 and 25.14 in group 2, and there was a significant difference between the groups ($p = 0$). ($p = 0.986$), at 6 months postoperatively, the mean qDASH value was 4.69 in group 1. In group 2, and there was no significant difference ($p = 0.926$).

Preoperative mean contracture degree was 17.02 degrees in group 1 and 22.18 degrees in group 2, and there was a significant difference ($p = 0$).

Discussion

Trigger finger is a common disease treated by hand surgeons. The generally accepted treatment for patients who do not benefit from conservative treatment is open surgery. Postoperative complication rate is between 1 and 43% [16–19]. Persistent PIP joint flexion contracture is the most common complication [16–21]. Physical therapy is used to treat this contracture and stiffness and patients may benefit [7, 21]. Osterman et al. in the presence of PIP joint contracture, they recommended three different surgical procedures: partial FDS excision, complete FDS excision and flexor digitorum profundus reduction tenoplasty [22].

There are studies reporting that A1 pulley release is not sufficient in patients with preoperative PIP joint flexion contracture and that additional surgical techniques are required [23, 24]. Favre and Kinnen published a study of 36 patients in which they performed complete instead of partial FDS excision in 36 patients, 7 of whom had previously undergone trigger finger surgery. While 72% of the patients gained full extension without additional treatment, 28% had

Table 2. Demographic characteristics of patients.

Variable	Female	Male	Average year
Group 1	31	13	61.67
Group 2	24	7	66.34

extension deficits in the early postoperative period and gained full extension with physiotherapy and steroid injections [24]. Le Viet et al. published a study of 172 patients treated with A1 pulley and USSR (17). PIP flexion contracture improved in all but 8 patients and full extension was achieved in 62% of patients [23].

Baek et al. conducted a study of 60 patients in which they compared two groups in which they performed A1 pulley release and additional USSR [19]. They obtained similar postoperative clinical results, PIP contracture and VAS scores in the two groups of patients. They stated that A1 pulley release was sufficient in patients with preoperative contracture. In our study, there was no significant difference between the groups in terms of postoperative qDASH score, PIP contracture and VAS score. The effect of USSR could not be measured because no pinch and grip test was performed, but the patients had no complaints in this direction.

Baek et al., in their study examining patients with prolonged postoperative symptoms after A1 pulley release, stated that the most important factors in this were the presence of long-term preoperative symptoms and the presence of PIP joint contracture [6]. Patients with PIP joint contracture often have long-term symptoms. Long-term disease has been suggested to cause chronic inflammation and degeneration of the FDS tendon, leading to PIP joint contracture [23–25]. In our study, patients who underwent A1 pulley release had a shorter duration of symptoms than patients who additionally underwent USSR. Furthermore, patients who underwent USSR had higher preoperative PIP joint contracture degrees.

In this study, we investigated USSR risk factors in order to provide detailed information about the surgery plan to patients with trigger finger disease. Although we had no complications after USSR in addition to A1 pulley release, Le Viet et al. reported A2 pulley injury requiring pulley reconstruction in two patients who underwent USSR [23]. Additionally, USSR may cause hypersensitive scarring and skin contracture because it requires more skin incisions and more aggressive surgery than A1 pulley release alone. Preoperative detailed information should be given about the theoretical possibility of decreased grip and pinch strength. This can also be a problem for musicians or people with fine work where the independent function of the FDS tendon is important.

The limitations of our study include the fact that it was a retrospective study and the small number of patients. In addition, although the subject of our study is not the comparison of postoperative results, the fact that the patients were not examined for grip and pinch strength can also be considered as a limitation.

In conclusion, higher preoperative VAS score, higher qDASH score, higher preoperative symptom duration and higher PIP joint contracture lead to the need for USSR. Patients should be informed accordingly and surgery plans should be made accordingly.

Disclosure statement

The authors report no conflicts of interest

Funding

The authors did not receive funding.

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