

# Complications of Open Trigger Finger Release

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**Purpose** Open release of A1 pulleys for trigger finger has been thought of as a relatively benign procedure with a low complication rate. Few studies have examined the rate of complications in trigger finger release. The objective of this study was to retrospectively review the complications documented for a cohort of patients who received open trigger finger releases.

**Methods** We conducted a retrospective chart review of 43 patients who had had 78 open trigger finger releases by a single surgeon. Any postoperative complications that were documented were recorded. Complications were then divided into major and minor. Major complications required further surgery or resulted in significant limitations of activities of daily living; minor complications hindered recovery, responded to treatment (if applicable), and either resolved or had little impact on function.

**Results** Two major complications were noted: a synovial fistula that required excision, and proximal interphalangeal joint arthrofibrosis that required cast application for pain relief. The major complication rate was 3% per trigger release (2/78). Twenty-seven minor complications in 22 digits were documented for these cases, including decreased range of motion, scar tenderness, pain, and wound erythema. The minor complication rate was 28% (22/78). The overall, combined complication rate for these primary interventions was 31% (24/78).

**Conclusions** Open trigger finger release is thought to be a low-risk procedure by most practitioners. In this study, we found that major complications do occur infrequently; however, the rate of minor complications was surprisingly high and related mostly to wound complications or loss of finger range of motion. The surgeon performing open trigger finger releases should inform the patient of the likelihood of having these minor complications. (*J Hand Surg* 2010;35A:594–596. © 2010 Published by Elsevier Inc. on behalf of the American Society for Surgery of the Hand.)

**Type of study/level of evidence** Therapeutic IV.

**Key words** A1 pulley release, complications, trigger finger.

**T**RIGGER FINGER IS a common disease process seen by hand surgeons and therapists. When surgical treatment is indicated, open release of the A1 pulley has traditionally been recommended. It has been considered a minor procedure with a low

complication rate, but few studies report on the outcomes or complications of this procedure. The few studies reporting on the complications of open trigger finger release have shown complication rates ranging from 11% to 43%.<sup>1–3</sup> A majority of reported complications have been minor, including scar pain and tenderness, slight extension lag, redness resolving with oral antibiotics, and recurrence of triggering. However, major complications have been reported, including bowstringing of the flexor tendon,<sup>4</sup> transection of a digital nerve<sup>2,5</sup> and infection requiring reoperation.<sup>2</sup>

The purpose of this study is to report the complications associated with open trigger finger release in a consecutive series of patients.

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**TABLE 1. Minor Complications by Site**

Complication	Thumb (n = 9)	Index (n = 10)	Long (n = 28)	Ring (n = 25)	Little (n = 6)
Scar tenderness, dysesthesia	0	2*	2*	0	0
Swelling, pain, discomfort	0	1	3	4*	1*
Limited range of motion	0	1*	4*	4*	1*
Wound (infection, dehiscence)	1	0	1	2	0
Total digits affected	1 (11%)	3 (30%)	9 (32%)	8 (32%)	1 (17%)

\*One or more digits have multiple minor complications.

## MATERIALS AND METHODS

Records were reviewed of 43 consecutive patients who underwent open trigger finger release by the senior author (J.L.) between October 1996 and May 2003. Twenty-five women and 18 men were included. Average age was 61.5 years (range, 34–85 y). A total of 78 open trigger releases were performed. Inclusion criteria were age greater than 18 years and past treatment for trigger finger by the senior author. The sole exclusion criterion was a condition of rheumatoid arthritis, which is treated by reduction tenoplasty rather than A1 pulley release. Average follow-up was approximately 16 months (range, 2–126 mo). Although follow-up was brief in some cases, no patient was lost to follow-up. [Table 1](#) shows the anatomic distribution of open trigger finger release sites. All adverse findings noted in the records, such as persistent pain, scar tenderness, and limited range of motion, were recorded on an Excel spreadsheet and are included in [Table 1](#).

Surgical technique consisted of a transverse incision over the A1 pulley under local anesthesia, and sometimes with sedation. The A1 pulley was identified and sharply divided longitudinally. Proximally, the so-called “pseudo pulley,” as described by Manske<sup>6</sup> and Doyle,<sup>7</sup> was released as well. The patient was then asked to actively flex and extend the finger while still in the operating room, before wound closure, to verify complete relief of the triggering. The wound was then closed and dressed with a bulky dressing until follow-up, which was usually within the next 24 to 48 hours.

Any documented postoperative complications were recorded. Complications were divided into major and minor complications. Major complications were defined as those requiring further surgery or causing significant impairment in the context of activities of daily living; minor complications hindered recovery, responded to treatment (if applicable), and either resolved or had little impact on function. All clinical evaluations were conducted by the senior author. Complication rates were calculated on a per-digit basis (ie, digits with

one or more complications divided by total number of treated digits).

## RESULTS

There were 27 minor complications in 22 digits that had had primary release. These included 10 cases of decreased range of motion of the operated digit (<20°), usually presenting as a flexion contracture in the proximal interphalangeal (PIP) joint, 4 cases of scar tenderness, 9 cases of swelling and pain, and 4 cases of wound erythema or infection. The latter was treated with oral cephazolin. Overall, the minor complication rate for all cases was 28% (22/78). In instances of decreased range of motion, therapy restored adequate range of motion of the affected digit. In each case of scar tenderness, wound erythema, and swelling, the symptoms subsided by 6 months. [Table 1](#) shows the anatomic distribution of minor complications of open trigger finger release sites.

Two major complications were documented for primary procedures: a synovial fistula that required further surgery and a PIP joint arthrofibrosis. The synovial fistula resulted in wound dehiscence that did not respond to conservative measures—that is, culture and sensitivity of the drainage followed by antibiotics and dressing changes. Eventually, the wound was explored with excision of the fistula. At the time of exploration, a small residual flap of A1 pulley appeared to be irritating the tendon, resulting in excess synovial fluid production. Debridement of this flap of pulley, combined with excision of the fistula and skin margins, led to healing of the wound.

In the case of the other major complication, arthrofibrosis, the patient required serial cast application for 3 weeks for pain relief and to maintain extension at the PIP joint. This was followed by an additional 3 weeks with active range of motion exercises and nonsteroidal medication. The patient’s final result was a 30° lack of full extension at the PIP joint and active flexion to 85°.

Overall, the major complication rate was 3% (2/78). All patients with major complications had no recurrence of triggering and have returned to preoperative functional levels. Finally, no cases of numbness or paresthesias, ulnar drift, or triggering recurrence were reported in any of the operated digits. The overall (combined) complication rate was 31% (24/78).

## DISCUSSION

To our knowledge only 3 retrospective reports exist reporting the complications of open trigger finger release.<sup>1-3</sup> Complication rates range from 11% to 43%. Our reported combined complication rate of 31% (24/78) is at the upper end of that range. The vast majority of complications reported here were minor in nature; that is, loss of range of motion at the PIP joint, swelling, erythema, and persistent incisional pain that persisted 3 to 6 months after the surgery. No recurrence of triggering, digital nerve injuries, ulnar drift, or A2 pulley injuries occurred in this series.

Thorpe<sup>2</sup> reported on the complication rate of trigger finger release in Australia. The complications were examined according to the level of training of the primary surgeon. All major complications (2 nerve injuries and 1 infection) occurred when senior house officers, who are equivalent to residents in North America, performed the surgery. Nerve injury is a devastating complication of open trigger finger release. The thumb is at highest risk for this complication because the radial digital nerve courses subcutaneously over the A1 pulley. Carrozzella et al<sup>5</sup> reported that the radial digital nerve of the thumb at the level of the metacarpophalangeal crease is only 2.19 mm below the dermis and 1.15 mm anterior to the radial sesamoid bone, which can act as a cutting board to transect the nerve.

Strengths of this study are its consecutive nature and size. Weaknesses of the study include the absence of

assessor blinding, a potential source for bias, as well as the retrospective nature of the investigation.

This study confirms previous reports that major complications occur infrequently in the setting of open trigger finger releases. Inexperienced surgeons are more likely to cause major complications. However, minor complications, most often scar pain and decreased range of motion, do occur relatively frequently. The surgeon performing open trigger finger releases should inform the patient before surgery of the possibility of their having these minor complications and can reassure patients that scar tenderness, swelling, and erythema will resolve with time. Surgical release of trigger finger is too often considered a minor surgical procedure. Although it is minor when compared to lengthy procedures requiring general anesthesia, release of a trigger finger alters the mechanics of the superficialis and profundus tendons of the finger. When no problems occur, patients are satisfied with their result as soon as incisional pain subsides. In patients with minor complications, such as local wound infection, prolonged swelling, or incisional pain, the time to return to normal function can be lengthy.

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