Journal of Hand Surgery Global Online 4 (2022) 153–155

Contents lists available at ScienceDirect

Journal of Hand Surgery Global Online

journal homepage: www.JHSGO.org

Original Research

Office-Based Open Trigger Finger Release Has a Low Complication Rate

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ARTICLE INFO

Article history:
Received for publication August 22, 2021
Accepted in revised form January 19, 2022
Available online February 12, 2022

Key words:
Complications
Office surgery
Open release
Trigger finger

Purpose: Open trigger finger release is generally performed in the operating room in an outpatient setting. Its complication rate widely varies between 1% and 43%. Our goal was to determine whether performing this surgery in the clinic is a safe and viable alternative to performing this surgery in the operating room.
Methods: All open trigger finger releases performed at our clinic between 2015 and 2019 were retrospectively reviewed. Each surgery was performed by the same fellowship-trained hand surgeon using a standard open technique with an Esmarch tourniquet and without the use of epinephrine. Five hundred twenty seven finger releases were performed in 514 patients. Complications were defined as signs or symptoms requiring further treatment.
Results: There were 33 documented complications in the 527 fingers (6.3%). The most common complications were minor wound complications, including 17 (3.2%) with localized cellulitis, 2 (0.4%) with a superficial infection, 4 (0.8%) with stitch abscesses, and 5 (0.9%) with wound dehiscence. All minor complications resolved quickly with oral antibiotics and supportive care. Five patients (0.9%) required further operative management. Of these 5, 2 (0.4%) had a deep infection, 1 had chronic dehiscence, and 2 (0.4%) required flexor tenosynovectomy for persistent pain and stiffness.
Conclusions: Patients who undergo open trigger finger release surgery in the clinic have complication rates similar to reported complication rates of surgery performed in the operating room.
Clinical relevance: Performing open trigger finger surgery in the office is safe. We continue to perform this surgery during the coronavirus disease 2019 pandemic, when access to operating rooms and personal protective equipment is limited.

Trigger finger is a common condition, with rates approaching 3% in the general population and 10% in diabetics.[1] Conservative therapies such as orthosis fabrication and corticosteroid injections can be effective first-line treatment options. Percutaneous release can be effective and is an office-based procedure that is typically not offered for thumb and small finger releases.[2] For those in whom conservative measures fail, open trigger finger release is the most common option and is usually performed at outpatient surgical centers. It is considered a relatively safe and extremely effective surgical option.[3,4] The incidence of complications such as infection, stiffness, digital nerve injury, and recurrence varies widely.[5–8] Our goal was to examine the incidence of the complications of office-based open trigger release and determine whether performing this surgery in the clinic is a safe option compared with performing the surgery in the operating room. We hypothesized that trigger finger release surgery performed in the office setting is safe because of its low postoperative infection rate.

Materials and Methods

This study was approved by our institutional review board, and each patient consented to treatment and provided HIPAA consent. We conducted a retrospective chart review of all clinic-based open trigger finger releases (Current Procedural terminology code 26055) performed between January 1, 2015, and December 31, 2019. In total, 590 patients underwent 601 trigger finger releases. We excluded any patient with less than 14 days of follow-up, leaving us with 514 patients and 527 fingers for analysis. During the study period, we also performed 137 trigger finger releases in

Declaration of interests: No benefits in any form have been received or will be received by the authors related directly or indirectly to the subject of this article.

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https://doi.org/10.1016/j.jhsg.2022.01.008

110 patients at the outpatient surgical center. These patients were apprehensive about undergoing surgery without anesthesia and were also more likely to undergo other procedures in the same setting. Thus, they were excluded from our analysis. The charts were reviewed for evidence of postoperative complications. Specifically, we assessed for the need for reoperation; superficial or deep infection; wound complications, including cellulitis; digital nerve injury; or failure of the resolution of symptoms. In accordance with the Center for Disease Control classification system for postoperative infections, a superficial infection was defined as any patient who presented with the clinical signs of a superficial infection and/or a patient who had localized superficial purulence.[9] A deep infection was defined as any patient who presented with a deep-space infection and a patient who required urgent operative debridement. All reoperations for complications were also analyzed.

During the study period, each patient was taken into the designated clinic room of the day. This was a regular patient examination room that was designated as our procedure room for that clinic session. The procedure room staff included only the surgeon, the physician's assistant, and a medical assistant. The ambient room temperature varied between 68 and 70 °F (20–22 °C). All patient surfaces were wiped down with a disinfectant before and after each procedure. The patients were not given preoperative or postoperative antibiotics. The affected fingers were marked using a surgical marker and then given a local injection of 5–10 mL of a mixture of 9 mL of 1% lidocaine without epinephrine (Xylocaine, Fresnius Kabi USA LLC) and 1 mL of 8.4% sodium bicarbonate (Hospira, Inc). The patients were asked not to stop taking any blood thinners. The surgeon and midlevel provider used Avagard (3M Health Care) for hand sterilization and then donned sterile gloves and sterile sleeves. The operative hand, wrist, and elbow were then prepped with Duraprep (3M Health Care) and draped with sterile towels (Fig.). A final timeout was initiated by the surgeon, and our universal protocol was completed. An Esmarch tourniquet (Hartmann USA, Inc) was used and left on the forearm for the duration of the procedure. A longitudinal or oblique incision was made over the A1 pulley on all fingers, and a transverse incision was made on thumbs. Loupe magnification using light-emitting diode headlight illumination was used for each case. Upon completion of the procedure, the wound in each case was irrigated with 30 mL of 0.9% USP normal saline (Nurse Assist, Inc) and closed up using a simple 4-0 nylon suture (Ethicon, LLC). Adaptic (Systagenix) and dry sterile dressing were applied. The tourniquet was released after the dressings were applied. Finger perfusion was assessed. The patients then had their pulse and blood pressure measured, after which they were discharged with written postoperative instructions to remove the dressing in 3 days and apply band aid. The patients were also instructed to return for the removal of stitches and a clinical checkup 7–10 days after the surgery. Those with preoperative contracture were offered postoperative hand therapy.

Figure. Operative setup in the office.

Results

The study included 341 women and 173 men, and the average age at the time of follow-up was 65 years (range, 24–89 years). The fingers most commonly requiring surgery were the right long finger (104/527; 20%) and the right thumb (88/527; 17%). The fingers least commonly requiring surgery were the left small finger (4/527; 1%) and the left index finger (12/527; 2%). The average follow-up duration was 44 weeks (the minimum follow-up period was 14 days). Ten patients were lost to follow-up (ie, never returned for their first postoperative follow-up) and, thus, were excluded from the study. We identified 33 complications, of which 5 required further operative management (Table). Two of these patients had deep infections, 1 of whom was an insulin-dependent diabetic and noncompliant after the surgery (he removed his surgical dressing on postoperative day 1 so that he could manually clean his fish tank). Both the patients were taken back to the operating room for urgent operative debridement and received a single dose of intravenous antibiotics. Neither patient required a second operative debridement or in-patient admission. Both the patients recovered completely, with excellent function. Another patient had noninfected persistent wound dehiscence, which required a repeat surgical closure. Two patients required a repeat operative flexor tenosynovectomy for persistent pain and stiffness

We identified 28 wound complications, which included 2 patients with superficial infections, 17 with cellulitis, 4 with stitch abscesses, and 5 with superficial wound dehiscence. Six of these patients were diabetic, and 2 were on warfarin. Each patient was treated with 7–10 days of oral antibiotics. All the patients recovered quickly and with no functional deficits. None required operative management.

Discussion

In this study, we showed that it is safe to perform open trigger finger release in the office. The results of the same surgery when performed in the operating room are well established.[10] In our series of office-based open trigger finger releases, we found an overall complication rate of 6.3%, which is lower than that of other reports.[10–12] The most common issues were wound complications, including cellulitis, the most common complication, at a rate of 3.2%. In our study, the incidence of superficial and deep wound

Table
Complication Type and Frequency

Type of Complication	Number of Patients	Percentage, %
Deep infection	2	0.4
Superficial infection	2	0.4
Cellulitis	17	3.2
Stitch abscess	4	0.8
Dehiscence	5	0.9
Flexor tenosynovitis	2	0.4
Hematoma	1	0.2
Reoperation	5	0.9

infections was each at 0.4%, which are similar to previously reported rates.[9] The need for reoperation was 0.9%, which is also similar to other reports.[13,14] Most of the complications in our study were minor and required very little postoperative intervention.

We treated all minor wound issues, such as cellulitis, stitch abscess, and swelling, more aggressively than we would have if the surgeries were performed in the operating room. We chose this more aggressive approach to treating minor wound complications because office-based open trigger finger surgery has not yet been widely accepted as a standard practice. Because none of our patients stopped taking their anticoagulation drugs before the surgery (including warfarin, clopidogrel, apixaban, or aspirin), we might have treated erythematous wounds and hematomas overly aggressively by prescribing antibiotics. The deep infection rate was less than 0.5%, which is within the published range. The wound complications in our study, we believe, were not due to the office site of surgery but, instead, due to the inherent risks of the operation.

Moreover, undergoing surgery in the office is more efficient and convenient for many patients, especially during the coronavirus disease 2019 pandemic. For example, some patients can often undergo surgery in the same setting as their office visit, although most patients prefer to return for a scheduled procedure. Travel time, work disruptions, and preoperative preparation are all far lesser for the patient. Preoperative coronavirus disease testing is not required. Patient satisfaction with office-based surgery has been shown to be as high as 94%.[15] Office-based surgery can also be very cost-effective compared with the same procedure performed in an outpatient facility. For example, carpal tunnel surgery performed in the procedure room in Canada has been shown to cost 25% of the cost of and be twice as efficient as the same surgery performed in the operating room.[16]

The strengths of our study include the fact that this is one of the only known reported series of traditional open trigger finger releases performed in the clinic setting. Furthermore, all the surgeries were performed in the same fashion by 1 fellowship-trained hand surgeon in a private practice setting. This limits variation compared with that in other studies conducted at teaching institutions involving numerous surgeons. Our case series was also consistent because we had no alterations in our treatment protocols throughout the duration of our analysis.

A limitation of our study was the retrospective design and chart reviews, which might have led to a reporting bias. We also broadly included cellulitis as a postoperative complication and treated each patient with oral antibiotics, although the Center for Disease Control guidelines do not classify cellulitis as a reportable complication.[9] Another limitation of our study includes the short minimum follow-up time of 14 days. Because many patients with trigger finger release were discharged after the removal of stitches, this resulted in the exclusion of 76 patients from the analysis, who had less than 14 days of follow-up. This group of patients accounted for nearly 15% of our case volume.

In conclusion, we believe that open trigger finger surgery performed in the office is safe because of its low postoperative infection rate. Anecdotally, the office setting is usually preferred by patients because it is significantly less costly and more accessible than the operating room setting.

Acknowledgments

The authors would like to thank Philip Blazar, MD, and Craig Rodner, MD, for their guidance and help with editing this article.

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