Risk Factors for Postoperative Complications in Trigger Finger Release

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Postoperative complications when treating a patient with trigger finger can lead to unexpected costs and long recovery. Can an assessment of potential risk factors before surgery prevent complications?

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tenosing tenosynovitis, or trigger finger, is a pathology commonly referred to the plastic and hand surgery service of the North Florida/South Georgia Veterans Health System (NFSGVHS). Patients usually present to their primary care provider with symptoms of the finger being temporarily locked or stuck in the flexed position. This can be a painful problem due to the size mismatch between the flexor tendon and the pulley under which it glides.

Patients are typically referred to surgery after failing ≥ 1 attempt at nonoperative management. The surgery is relatively quick and straightforward; however, postoperative complications can lead to an unexpected costly and lengthy recovery. The objective of this study was to identify potential risk factors that can predispose patients to postoperative complications so that those risk factors may be better anticipated and modified, if possible.

METHODS
A retrospective chart review of trigger finger release surgery was performed on-site at the Malcom Randall VAMC in Gainesville, Florida, from January 2005 to December 2010 to identify risk factors associated with postoperative complications. The study was approved by both the NFSGVHS Internal Review Board and the University of Florida Institutional Review Board. Patients who underwent surgery exclusively for ≥ 1 trigger fingers by the plastic surgery service were included in the study.

The surgery involves making an incision over the affected A1 pulley in the hand (Figure 1) and sharply releasing it (Figure 2) under direct vision. Potential risk factors for postoperative complications were recorded. These risk factors included smoking status, diabetic status, type of incision, and number of digits released during the surgical procedure.

RESULTS
Ninety-eight digits (on 81 hands) were identified as meeting inclusion criteria. Surgeries were performed using a longitudinal (43), transverse (48), oblique (5), or Brunner (2) incision. There were 10 complications: cellulitis (3), pyogenic flexor tenosynovitis (3), scar adhesion (1), delayed healing (2), and incomplete release (1). The overall complication rate was 10.2%. The authors compared risk factors with complications, using the chi square test and a determining of \( P < .05 \).

There was no link found between overall postoperative complications and diabetic status, incision type, or smoking status. There was a statistically significant link between diabetic patients and the incidence of postoperative infection \( (P = .002) \) and between 2 digits operated on during the same surgery and postoperative infection \( (P = .027) \).

DISCUSSION
The routine practice of the NFSGVHS hand clinic is to offer a steroid injection as the initial treatment for trigger finger. Health care providers (HCPs) allow no more than 3 injections to the same digit to avoid the rare but potentially serious complication of a tendon rupture.¹ Due to the large NFSGVHS catchment area, wait time for elective trigger finger surgery is several months. This 3-injection plan has been well received by patients and referring

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providers due to these wait times. However, a recent article by Kerrigan and Stanwix concluded that the most cost-efficient treatment strategy is 2 steroid injections before surgery.

More often than not, trigger finger release is a short, outpatient surgery with a quick recovery. To minimize the risk of stiffness and scar adhesions, the NFSGVHS practice is to refer all postoperative hand cases for ≥ 1 hand therapy appointment on the same day as their first postoperative visit.

Cost Estimates
When complications occur, they can be costly to patients due to both time spent away from home and work and additional expenses. When the current procedural terminology (CPT) codes are run through the VistA integrated billing system, based on the VHA Chief Business Office Reasonable Charges, a complication can more than double the charges associated with A1 pulley surgery.

A flexor sheath incision and drainage (I+D) (CPT 26020) charges $8,935.35 (facility charge, $6,911.95 plus professional fee, $2,023.40), compared with open trigger finger release (CPT 26055) at $8,365.66 (facility charge, $6,911.95 plus professional fee, $1,453.71). According to a conversation with the finance service officer at NFSGVHS (2/11/2014), the anesthesia bill ($490.56/15 min), anticipated level 3 emergency department visits (facility charge, $889.22 plus professional fee $493.40), and inpatient stays (daily floor bed $786.19) can make an infectious complication costly.

Trigger finger can also be released percutaneously. This is a reasonable option that avoids the operating room, but NFSGVHS surgeons prefer the open surgery due to concerns for tendon and nerve injury that can result from a blind sweep of the needle.

Existing studies found complications for trigger finger release ranging from 1% to 31%. Wound complications and joint stiffness are known complications. In this study, 60% of the complications were infectious, and 80% of the complications were wound complications. Six of 8 patients with wound-healing complications received perioperative antibiotics. Three patients returned to the operating room for an I+D of the flexor sheath. The results showed a statistically significant link between > 1 digit treated at the same surgery and postoperative complications (P = .027). A PubMed search revealed no existing hand literature with this association.

Risk Factors
Diabetes, tobacco use, type of incision, and number of digits treated were assessed as risk factors for complications after trigger finger surgery. Nicotine is widely accepted as increasing the risk for wound complications. Almost 20% of the U.S. population smokes, compared with 22% of the VA population and 32% of active-duty military personnel. One in 4 veterans has been diagnosed with diabetes, a well-known predisposing factor in delayed wound healing and infection. No prior studies were found comparing type of incision or multiple digits treated as complications risk factors. There is also a well-known association between trigger finger and diabetes. Chronic hyperglycemia results in the accumulation of collagen within tendon sheaths due to impairment of collagen breakdown. Patients with diabetes tend to present with multiple digit involvement and respond less favorably to steroid injections compared with patients without diabetes.
diabetes. The overall consensus of the hospital's HCPs. The authors recommend that all patients start with a steroid injection before committing to surgery. Patients with diabetes are informed that the injection will cause a temporary rise in their blood glucose. If they are resistant to the injection, high-dose oral nonsteroidal anti-inflammatory drugs and/or proximal interphalangeal joint splinting is ordered.

Verification of A1C values showing better chronic management of blood sugar is a procedure HCPs from the NFSGVHS will begin to follow. Preoperative A1C values between 6.5% and 8% in patients known to have diabetes has been recommended. A1C values > 7% have been found to be an independent risk factor for stenosing tenosynovitis. The total number of trigger finger surgeries may drop an independent risk factor for stenosing tenosynovitis. 16 The number of trigger finger surgeries may drop with the benefit of improved utilization of resources.

CONCLUSION
The authors found a statistically significant association between postoperative A1C values and 2 patient populations: patients with diabetes (P = .002) and patients having > 1 digit released during the same surgery (P = .027). This outcome suggests using caution when offering AI pulley release in select patient populations.

Acknowledgement
Justine Pierson, BS, research coordinator at University of Florida, for statistical analysis. Funding is through salary.

Author disclosures
The authors report no actual or potential conflicts of interest with regard to this article.

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REFERENCES