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Diagnosis and treatment of trigger digits: an updated review

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ABSTRACT

The condition usually presents with triggering during finger flexion and extension, as well as tenderness at the A1 pulley region, at the level of the metacarpus. The goal of treatment is to restore an undisturbed full range of motion in the affected digit. The most common treatments include steroid injection and surgical release of the A1 pulley, either open or percutaneous. The article presents various management options and their effectiveness. Steroid injections are effective in 70–80% of cases (providing pain relief and resolution of triggering), but recurrence occurs in as many as half of the patients within 6 months. Open surgical release achieves recovery in up to 97% of patients, with rare relapses, but it may be associated with complications such as finger stiffness, painful scarring, algodystrophy, or digital nerve injury. Percutaneous release is considered less traumatic and, therefore, associated with minimal morbidity. Minimally invasive therapy is undoubtedly more cost-effective, can be performed on an outpatient basis, and allows for faster functional recovery. The article also presents the results of studies evaluating which treatment strategy is the most economically justified.

Keywords: trigger digit; steroid injection; tendon sheath release.

INTRODUCTION

A condition commonly called "trigger digit" or "trigger finger" is also known as stenosing tenosynovitis. Although the first term sounds more colloquial and less scientific, it better reflects the nature of the disease than the second, which implies a significant inaccuracy. Pathological examination of the affected flexor tendon fibrous pulley has not revealed a process of unequivocal inflammation but rather one of a degenerative nature [1, 2]. The term "trigger finger" is widely used in English-language literature, confirming the legitimacy of adopting this term in Polish as well.

The direct cause of trigger digit is not known. It is believed to result from mechanical factors (overload, repetitive trauma), chronic inflammation, or degeneration. The A1 portion of the flexor tendon pulley is particularly exposed to extreme overload and friction from the tendon passing in and out of the pulley during finger flexion and extension. This mechanical exposure is considered one of the causes of trigger finger development [1].

Trigger finger statistically affects women significantly more often than men and is frequently associated with diabetes, rheumatoid arthritis, and carpal tunnel syndrome. The condition is more common in diabetic patients, with a reported prevalence of 10–20%, compared to 1–2% in the general population. Conversely, about 25% of patients with trigger digits have diabetes. Multiple finger and bilateral involvement are significantly more frequent in diabetic patients, as is the coexistence of carpal tunnel syndrome. The duration of diabetes, poor metabolic control, and the presence of microvascular complications are considered significant contributing factors [3].

PATHOPHYSIOLOGY AND HISTOPATHOLOGY

Pathological changes involve both the proximal fragment of the fibrous sheath of the flexor tendons (called the A1 pulley) and the adjacent superficial flexor tendon itself, consisting of chondroid metaplasia of the inner layer cells of the A1 pulley. The organization of these cells resembles a net and is similar to that seen in fibrous cartilage.

An examination of cross-sections of the A1 pulley in healthy individuals and in patients with trigger digit revealed substantial differences. In healthy pulleys, only 2 layers are present, whereas in affected pulleys, a third layer is observed. In a healthy pulley, the inner layer consists of dense, mature connective tissue containing collagen fibers. It is characterized by a small volume of extracellular matrix and thick bundles of type II collagen fibers oriented perpendicular to the long axis of the pulley. Fibrocytes and a small number of egg-shaped cells are dispersed between these bundles.

In contrast, in trigger digit, the inner layer of the A1 pulley consists of thin, irregular connective tissue with irregularly scattered thin collagen fibers. Oval-shaped cells resembling chondrocytes are located in small lacunae between the collagen fibers. Microscopically, the cellular pattern of the inner layer of the affected A1 pulley is characteristic of chondroid metaplasia. The presence of chondrocyte-like cells in the inner layer of the A1 pulley enables the production of an extracellular matrix characteristic of cartilage. This process may be triggered by mechanical factors (overload, repetitive trauma), chronic inflammation, or degeneration.

The middle layer of the A1 pulley is observed only in patients with trigger digits. It consists of regular connective tissue

rich in densely packed collagen fibers, measuring 1.1–1.8 μm in diameter, arranged perpendicular to the long axis of the pulley. Additionally, elastin fibers and spindle cells are loosely dispersed among these collagen fibers.

The external layer of the A1 pulley consists of loose connective tissue rich in blood vessels. Its ultrastructural pattern does not differ between normal and affected A1 pulleys [4].

PRESENTATION AND DIAGNOSIS

The condition involves a restriction of flexion and extension of the affected finger, caused by an impaired passage of the tendon through the initial portion of the fibrous flexor tendon sheath, known as the A1 pulley. In a typical presentation, the thickened portion of the tendon catches on the narrowed section of the fibrous pulley, preventing smooth movement. Overcoming this obstruction requires effort or assistance from the other hand, often resulting in the finger becoming locked in flexion and unable to extend freely. A characteristic "click" is heard when the tendon passes through the narrowed A1 pulley, often accompanied by significant pain.

The diagnosis of trigger digit is primarily clinical and based on history and physical examination. Typical findings include localized pain upon pressure in the distal palmar metacarpus, at the level of the A1 pulley, as well as clicking or triggering during flexion and extension of the affected digit. Triggering occurs due to a mismatch between the narrowed proximal portion of the A1 pulley and a localized swelling of the flexor tendon. During finger extension, this swollen portion of the flexor tendon moves into the A1 pulley, while during flexion, it exits the pulley. These movements are associated with clicking or triggering. Occasionally, patients may perceive triggering at the proximal interphalangeal (PIP) joint.

In the early stages of the disease, patients often report localized tenderness in the distal metacarpus without triggering. These symptoms may be more pronounced in the morning and gradually subside throughout the day. In advanced stages, movement restriction at the metacarpophalangeal and PIP joints becomes more severe, eventually leading to complete locking of the affected digit. On examination, palpable clicking, nodules, and nodular thickening of the A1 pulley may be detected. The Froimson classification (Tab. 1) is considered a simple and useful tool for grading the clinical severity of the condition [5].

TABLE 1. Froimson's scale for clinical severity of trigger digits

Grade	Symptoms and signs
1°	tenderness in the base of the affected digit, with a history of triggering
2°	triggering observed during examination, with a full active range of motion in the affected digit
3°	triggering observed during examination, with an inability to extend the affected digit without assistance from the other hand
4°	contracture of the affected digit, with no active range of motion ("locked digit")

TREATMENT

Treatment of trigger finger is considered simple and low-demanding. Management of the condition includes intra- or extrasynovial steroid injections, as well as surgical release of the A1 pulley, either through an open or percutaneous approach [2, 6]. However, a review of the literature does not fully support these optimistic treatment outcomes.

The efficacy of steroid injections is estimated at 70–80% in terms of pain relief and resolution of triggering, but recurrence occurs in half of the patients within a 6-month follow-up. Open surgical release achieves recovery in up to 97% of patients, with a relapse rate of 3–9%, but it may be associated with complications such as: finger stiffness, painful scarring, infection, algodystrophy, or digital nerve damage.

Percutaneous release of the A1 pulley, which gained popularity in the last decade of the 20th century, is considered less traumatic and is associated with a lower risk of complications. This common condition is managed by physicians from various specialties, and the choice of treatment method is often based on the physician's personal preference rather than rational clinical considerations.

As with carpal tunnel syndrome, there is no single, universally accepted treatment method for trigger finger. The results of a literature review on the efficacy of various treatments for trigger digit are presented below.

Splinting

Many splints and orthoses have been used to temporarily immobilize a single joint, including the metacarpophalangeal or PIP joint. Joint immobilization reduces friction between the tendon and the A1 pulley, thereby decreasing swelling and pain. Immobilization of the digit for 6 weeks is recommended, with an additional 12 weeks if the condition does not resolve. This therapy is more effective in less advanced cases of trigger digit (i.e., Froimson stages 1 and 2) [6].

Physiotherapy

Circular motion massage localized at the A1 pulley and along the entire tendon sheath of the affected finger may help reduce pain and swelling. This technique is reported to soften the pulley area and improve local circulation. Stretching the fingers into maximum extension at the metacarpophalangeal joints is believed to enhance flexor tendon tightness and excursion. Tendon gliding exercises are thought to promote better circulation of synovial fluid within the tendon sheath, particularly by facilitating differential glide between the profundus and sublimis flexor tendons [6].

Various physiotherapeutic measures have been used in the management of trigger digits, including ultrasound, therapeutic heat (wax therapy, paraffin baths), electrotherapy, and extracorporeal shock wave therapy (ESWT). The mechanism of heat therapy involves increasing local blood flow and enhancing the extensibility of collagenous tissues, which leads to a reduction in A1 pulley swelling. Extracorporeal shock wave therapy is believed to promote tendon healing by stimulating neoangiogenesis and growth factors (Fig. 1, 2).

Żyluk and Mosiejczuk reported the results of ESWT application for trigger digits in both short- and mid-term follow-ups. Their study included 32 patients (28 women and 4 men) with a mean age of 60 years and a total of 50 affected digits. Each patient underwent local ESWT (Fig. 1, 2, 3) with 3 applications at weekly intervals. Results were assessed at 1 week and 3 months post-treatment using the numeric rank scale for pain and the Froimson scale for clinical severity. One week after treatment, pain and triggering had either ceased completely or reduced significantly in 30 patients (94%). At the 3-month follow-up, symptoms had completely resolved in the same 30 patients (94%), who were considered recovered. In 2 patients (6%), the treatment was ineffective, and no improvement was observed. The authors concluded that ESWT is an effective therapy for trigger digits of grade II and III severity and may serve as an alternative to other non-invasive treatments, such as physiotherapy or steroid injections [7].

FIGURE 1. The PiezoWave shock wave generator with a transducer

FIGURE 2. Application of shock wave therapy in trigger digit

Steroid injections

Intrasheath or extrasynovial steroid injections have been the most popular method for treating trigger finger for many years. Although the precise mechanism of action of these drugs is not fully understood, their beneficial effects are well established. Initially, steroids such as triamcinolone, methylprednisolone, and betamethasone were injected into the fibrous sheath of the flexor tendon at the site of the painful, palpable thickening in the metacarpal region.

A safe technique for intrasheath injection involves inserting the needle into the flexor tendon at a 45° angle while the digit is maximally flexed at the interphalangeal joints (Fig. 3). The needle is then slightly withdrawn, and the digit is extended. This maneuver causes the needle to be pulled out of the tendon while its tip remains inside the fibrous pulley. The injection should proceed smoothly and without resistance; resistance may indicate that the needle is inside the tendon. Another technique involves inserting the needle through the tendon until it reaches the bone of the phalanx, then injecting the steroid from within the pulley.

The necessity of intrasheath steroid injections has been questioned, as several studies have demonstrated similar efficacy with extrasynovial (subcutaneous) drug application. Some studies suggest that subcutaneous steroid injection is at least as effective and technically less demanding, making it a simple method that avoids direct drug application into the tendon.

In general, steroid injection is considered the first-line treatment for trigger digit. In most patients, 1 to 3 injections administered at 3- to 4-month intervals result in symptom resolution (pain relief and cessation of triggering) [8]. However, poorer outcomes are observed in patients with multiple-digit involvement, diabetes, or more advanced disease. Up to 3 repeat steroid injections may improve the success rate and reduce the need for surgery. Other pharmacological options, such as nonsteroidal anti-inflammatory drugs or platelet-rich plasma, have not been shown to be as effective as steroids [6].

At the author's institution, steroid injection therapy, along with percutaneous release of the A1 pulley, is a routine procedure for treating trigger finger. This therapy is preferred for early and less advanced cases, while persistent or severe cases, including locked digits and recurrences, are managed surgically. According to the literature and clinical experience, subcutaneous steroid injection is a safe and effective treatment for trigger finger.

FIGURE 3. Steroid injection into the A1 pulley

Percutaneous A1 pulley release

Percutaneous A1 pulley release, using various cutting instruments such as a hypodermic needle, mini-scalpel, or specialized knives, has gained increasing popularity. However, the literature does not provide convincing evidence as to whether steroid injection or surgical release is the superior treatment method.

This procedure is relatively simple, can be performed in an outpatient setting under local anesthesia, and does not require sterile surgical equipment – only a hypodermic needle (Fig. 4, 5). However, critics of this technique highlight the potential risk of neurovascular bundle transection, as the release is performed "blindly." This risk is particularly concerning in thumb A1 pulley release due to the specific anatomy of the digital nerve, which crosses the flexor tendons on the radial side, just at the margin of the A1 pulley.

Two studies examining the efficacy and safety of percutaneous A1 pulley release in cadavers have raised doubts about this method. Bain et al. reported incomplete A1 pulley release in 20% of cases and failure in 12% in cadaveric specimens, as well as incomplete release in 5 out of 13 digits in the clinical portion of their study. The authors highlighted the particularly high risk of percutaneous release in the thumb and little finger due to the close proximity of the digital nerve [9]. Similarly, Pope and Wolfe found incomplete division of the A1 pulley in cadaver models and considered percutaneous release particularly hazardous for the same reason [10]. These studies contributed to skepticism regarding the safety of this technique.

However, while concerns have been raised about the percutaneous method, complications have been reported only after open release [11]. Safe percutaneous division of the A1 pulley can be achieved by holding the needle or blade perpendicularly, centered over the middle of the thumb, while keeping the thumb in full extension. Conversely, introducing and moving the needle more radially and proximally increases the risk of digital nerve transection

Ha et al. reported the results of treating 185 fingers in 151 patients – 120 women (79%) and 31 men (21%), mean age 54 years – using percutaneous release with a specialized thin knife featuring a bent tip. The mean disease duration was 9 months (range: 2–40 months). The thumb was the most commonly affected digit (43%), followed by the middle (31%), ring (19%), index (5%), and little finger (2%). A single digit was involved in 123 patients, 2 digits in 25 patients, and 3 or 4 digits in 3 patients. Prior steroid injections had been administered in 80 fingers (43%), with either temporary effectiveness or failure [12].

Results were evaluated at 1 month and at a mean follow-up of 1 year (range: 0.5–2 years). At 1 month, 1 patient experienced continued triggering and required a secondary percutaneous release, while 3 patients reported moderate pain. At the 1-year follow-up, recurrence of triggering occurred in 11 patients (6%), all of whom had severe grade 3° or 4° disease. These patients required secondary open surgery, which yielded good results. No serious complications were reported [12].

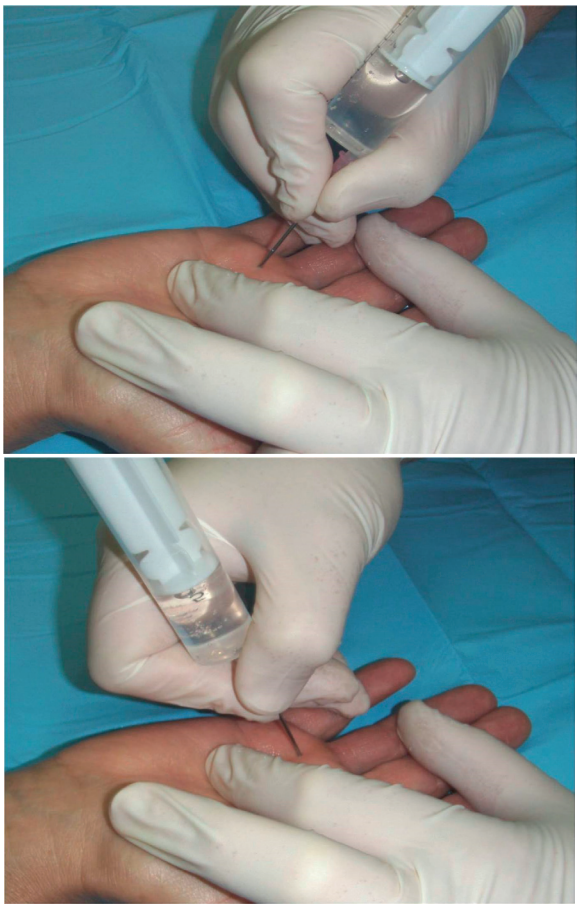

FIGURE 4. Percutaneous A1 pulley release using a needle

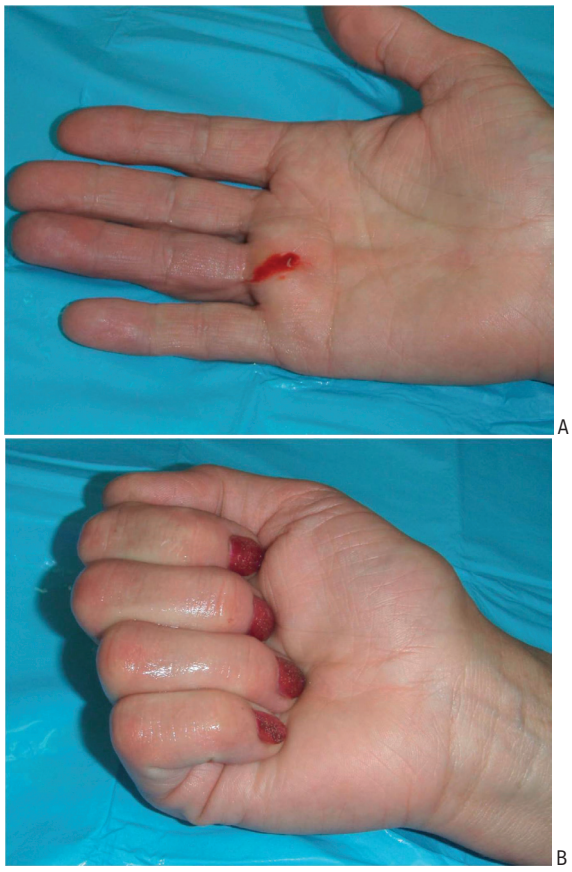

FIGURE 5. Unrestricted extension (A) and flexion (B) of the affected finger

Fu et al. examined the outcomes of percutaneous A1 pulley release using a hypodermic needle in 31 recurrent trigger digits that had previously undergone open surgical release. At a mean follow-up of 3 months, triggering had resolved in 28 digits (90%), while in 3 digits (10%), it was still detectable upon palpation. Patients who were employed were able to return to work after a mean of 3 days post-procedure. The authors emphasized the high efficacy and safety of the percutaneous technique, even for recurrent cases [13].

Jou and Chern performed percutaneous release of the A1 pulley under sonographic control using a special hooked knife. One hundred and four digits in 80 patients (49 women and 31 men) were operated on. Visualization of structures enabled precise anesthesia and division of the pulley, and the efficacy was impressive – 100%, with no complications or relapses at a mean follow-up of 1 year (range: 9–15 months), regardless of the duration and severity of the condition [14]. This technique is much more advanced and demanding compared to simple percutaneous release, requiring knowledge of ultrasound examination and specialized equipment, but its efficacy and safety are comparable to other reports.

Dunn and Pess also reported results of percutaneous release of the A1 pulley using a specially designed knife. Cadaveric studies showed complete release of the A1 pulley in 51 of 52 digits (98%) using this knife, but only in 10 of 26 digits (38%) when the division was performed with a hypodermic needle. Moreover, in 19 cases (73%), longitudinal damage to the flexor tendon was observed [15]. It appears that incision of the tendon surface during percutaneous release occurs relatively often, but it has no clinical sequelae.

A review of the literature on percutaneous release of the A1 pulley for trigger digits shows that this technique, contrary to some claims suggesting a higher risk, is effective, safe, and can be recommended for trigger finger release. It is more demanding, requires greater caution and adherence to procedural guidelines, but is undoubtedly cheaper, feasible in an outpatient setting, and provides faster functional recovery of the hand.

Comparison of 2 treatment modalities: percutaneous release vs. corticosteroid injection

Several studies have compared the effectiveness of percutaneous A1 pulley release vs. steroid injection. A review of some of these studies is presented below.

Żyluk and Jagielski compared the outcomes of percutaneous A1 pulley release and steroid injection in 105 trigger digits in 95 patients. The patients were randomly assigned to either surgery (43 patients, 46 digits) or steroid injection (52 patients, 59 digits). The results were assessed at 1 and 6 months, with measurements including recurrence rate (primary outcome measure), pain during movement, active range of motion (AROM) of the affected digit, and grip strength. At the 1-month assessment, no recurrences were noted. Patients treated surgically achieved significantly greater AROM of the fingers (270° vs. 264°) but had significantly weaker grip strength (85% vs. 99%) compared to those who received steroid injections. At the 6-month assessment, 6 recurrences (11%) occurred in the steroid injection group, while none were observed in the surgery group (statistically significant). Patients who underwent surgery reported significantly lower pain during movement of the affected digit (visual analogue scale: 0.1 vs. 0.4) but still had a lower AROM of the fingers (265° vs. 270°). The authors concluded that percutaneous A1 pulley release is a more effective therapy for trigger digit than steroid injection [16].

Abdoli et al. compared the efficacy of 2 outpatient treatment methods for trigger finger – percutaneous A1 pulley release vs. corticosteroid injection. A total of 83 patients were treated either with corticosteroid injection (n = 40) or percutaneous release of the A1 pulley (n = 43). Follow-up assessments were conducted at 1.5 and 6 months post-intervention. There was a significant difference in pain levels between the 2 groups at both time points. Pain was lower in the steroid injection group at 1.5 months but was lower in the percutaneous release group at 6 months. Patient satisfaction at 6 months was significantly higher in the percutaneous release group. Additionally, the incidence of stiffness was significantly lower in the percutaneous release group at 6 months. The authors concluded that patients in the percutaneous release group experienced greater recovery and satisfaction, with lower recurrence rates and pain. They recommended percutaneous release as a first-line treatment for trigger finger, particularly for patients who prefer to avoid open surgery [17].

Wang et al. conducted a literature review to evaluate the relative risk of treatment failure, patient satisfaction, and frequency of complications, comparing percutaneous release with open surgery or corticosteroid injections for adult patients with trigger digits. There were no differences in failure rates or complication frequency between percutaneous release and open surgery. Patients treated with percutaneous release had fewer treatment failures (recurrences) and a higher level of satisfaction compared to those treated with corticosteroid injections. No significant difference in complication frequency was found between percutaneous release and corticosteroid injection. The authors concluded that treatment failure and complication rates were similar between percutaneous and open surgery for trigger digit in adults. However, patients treated with percutaneous release were less likely to experience treatment failure compared to those who received corticosteroid injections [18].

Open surgical release of the A1 pulley

There are surprisingly few studies dedicated to classical operations for trigger finger, probably due to the apparent triviality of both the disease and the procedure. In the author's department, this operation is performed under local anesthesia and in a bloodless operative field, using a 1 cm transverse or, rarely, a longitudinal incision at the level of the distal palmar crease, in prolongation of the axis of the involved digit. After preparing the A1 pulley, sharp release is performed using a knife or scissors until unrestricted passage of the flexor tendon through the pulley is obtained. In severe cases, serous fluid is frequently seen in the pulley, along with distinct thickening on the surface of the tendon. Over the past 2 years, since the introduction of percutaneous release, this technique has only been used occasionally.

As already mentioned, the literature on this topic is modest. In one of the most frequently cited articles, Thorpe reported the results of treating 43 digits by open release of the A1 pulley, achieving recovery in only 26 cases (60%), with a 10% relapse rate and a complication rate as high as 28%. Complications included 4 cases of digital nerve transection and 1 case of finger stiffness [19]. This paper influenced the perception of this simple method for many years, associating it with high risk and inefficacy.

However, studies published since the turn of the 21st century have changed this perspective. Turowski et al. reported the results of treating 59 patients – 33 female (56%) and 26 male (44%) – with open release of the A1 pulley. The mean disease duration was 4 months, with the thumb being the most commonly affected digit (37%), followed by the ring (27%), middle (20%), index (10%), and little finger (5%). Seventeen patients (29%) had previously received steroid injections with temporary or no effect. The results were assessed at a mean follow-up of 4 years (range: 0.5–6 years). In 57 patients (97%), triggering and pain disappeared, while in 2 (3%), recurrence of complaints occurred after 6 months, though only 1 case was associated with triggering and required a repeat procedure. No serious complications were noted, but 2 patients experienced persistent pain in the operated finger lasting more than a year, and 1 patient reported restricted motion. The authors observed that a longer disease duration was associated with poorer surgical outcomes, particularly when it exceeded 12 months [20].

Finsen and Hagen reported long-term results of open release in 84 digits in 72 patients, with a mean age of 59 years. Disease duration was not specified. At a mean follow-up of 8 years (range: 7–11 years), 68 digits in an unspecified number of patients were completely recovered. Eleven patients reported mild complaints requiring no intervention. Three patients had significant complaints, including 2 cases (2%) of recurrent triggering. This was the second study evaluating the long-term outcomes of open trigger digit release, further confirming its high effectiveness [21].

Gilberts et al. compared the outcomes of treating trigger digits with open vs. percutaneous release. A total of 100 digits in 96 patients, with a mean age of 61 years, were treated using the open method under local anesthesia with 1% lignocaine, without a tourniquet. The mean disease duration was 12 months in the open release group and 6 months in the percutaneous release group. The most commonly affected digit was the thumb (40%), followed by the middle (29%), ring (19%), index (6%), and little finger (5%). Results were evaluated at a mean follow-up of 3 months. Triggering and other symptoms resolved in all patients treated percutaneously and in all but 1 patient treated with the open method. Operation time, postoperative pain, and work-off periods were significantly shorter with the percutaneous method. No serious complications were observed [11].

Without a doubt, the traditional open method of A1 pulley release for trigger finger is justified, has its advocates, and can be performed successfully. However, compared with the percutaneous technique, it is more time-consuming, more expensive, requires a longer recovery period, and – according to my findings – is associated with a higher complication rate. Although complications were generally rare, they included painful scars in the midhand, which hindered a secure grip, reduced finger mobility due to incomplete extension or tendon bowstringing, and algodystrophy. Digital nerve transections have never occurred.

COST EFFECTIVENESS OF THE TREATMENT

Criticism of healthcare systems in various countries includes both the underuse and overuse of resources. Optimizing the cost-benefit ratio of care is considered a high priority for healthcare providers and patients alike. Clinical trials have established the success of different treatment options for patients with trigger finger. The results of studies analyzing the economic impact of these differing strategies are presented below.

Kerrigan and Stanwix presented the results of a study aimed at identifying the least costly strategy for effective treatment of trigger finger. Five treatment strategies were identified: (1) a steroid injection followed by surgical release in cases of failure or recurrence; (2) a steroid injection followed by a second injection in cases of failure or recurrence, with definitive surgery if needed; (3) 3 steroid injections before definitive surgery if needed; (4) immediate surgical release; and (5) percutaneous release with definitive open surgery if needed. To reflect costs, the authors used 2 sources of data – their institution's billing charges to private payers and reimbursements from Medicare. A literature review identified median success rates for the different treatment strategies. A steroid injection followed by a second injection in cases of failure or recurrence, with definitive surgery if needed, appeared to be the least costly treatment among those considered. The most expensive treatment was surgical release, which cost between 250–340% more than the second strategy. For surgical or percutaneous release to be less expensive than the second strategy, the surgical billing charge would need to be lower than 742 USD for private payers or less than 305 USD in Medicare reimbursements. The authors concluded that management of trigger finger with 2 steroid injections before surgery is the most cost-effective treatment strategy [22].

Luther et al. presented the results of a study aimed at identifying the least costly strategy for treating diabetic trigger finger using existing evidence from the literature. Four treatment strategies for diabetic trigger finger were identified: (1) 1 steroid injection followed by surgical release; (2) 2 steroid injections followed by surgical release; (3) immediate surgical release in the operating room; and (4) immediate surgical release in the clinic. A literature review was conducted to determine the success rates of different treatment strategies. Cost analysis was performed using the authors' institutional Medicare reimbursement data. The least costly treatment strategy was immediate surgical release in the clinic. For insulin-dependent diabetes mellitus patients, this strategy resulted in a 32% and 39% cost reduction compared with treatment involving 1 or 2 steroid injections, respectively. For 1 or 2 steroid injections

to be the most cost-effective strategy, injection failure rates would need to be lower than 36% and 34%, respectively. The overall cost of care for immediate surgical release in the clinic was 642 USD. The authors concluded that managing diabetic trigger finger with immediate surgical release in the clinic is the most cost-effective strategy, assuming a steroid injection failure rate of at least 34% [23].

Nasser et al. investigated patient factors associated with treatment non-adherence, the success rates of steroid injections, and the economic consequences of non-adherence to treatment recommendations. The authors used data from the Clinformatics DataMart database (2010–2017) to conduct a population-based analysis of patients with single-digit trigger finger. They calculated steroid injection success rates and examined associations between injection success and patient factors. Additionally, they analyzed differences in costs to the insurer, costs to the patient, and total treatment costs. A total of 29,722 patients were included in this analysis. Injection success rates were similar for diabetic (72%) and non-diabetic patients (73%), as well as for women (73%) and men (73%). However, diabetic patients and women were significantly more likely to receive non-adherent treatment. In total, 23 million USD were spent on non-adherent trigger finger care. The authors concluded that diabetic patients and women have increased odds of undergoing surgery without a prior steroid injection, despite similar success rates of steroid injections compared to non-diabetics and men. Since performing surgical release before attempting steroid injections may represent a higher-cost treatment option, providers should administer steroid injections before surgery in all patients, regardless of diabetes status or sex, to minimize overtreatment [24].

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