Percutaneous Release of Trigger Fingers

Edson Sasahara Sato, PhD in Orthopedics*,
João Baptista Gomes dos Santos, PhD in Orthopedics,
João Carlos Belloti, PhD in Orthopedics,
Walter Manna Albertoni, PhD in Orthopedics,
Flavio Faloppa, PhD in Orthopedics

KEYWORDS

• Trigger • Tendon • Tenosynovitis finger percutaneous • Corticosteroid • Surgical • Release

KEY POINTS

- Trigger finger should be treated first by steroid injection because of its low morbidity.
- Treatment of trigger finger with percutaneous pulley release can only be performed if there is active triggering of the finger.
- Clear understanding of the location of the A1 pulley is key to successfully performing a percutaneous trigger release.

INTRODUCTION

Trigger finger is a common condition caused by impaired tendon gliding at the level of the A1 pulley. This impairment prevents the tendon from naturally extending and returning to its initial position, often resulting in a locked finger. Several factors, including synovial proliferation and fibrosis flexor sheath, have been associated with triggering, but as yet there is no consensus in the literature regarding its etiology.[1] Notta[2] described trigger finger as a condition caused by changes to the flexor tendon itself as well as the sheath. Hueston and Wilson[3] demonstrated in an anatomic study that the spiral arrangement of the architecture of the intratendon fibers leads to the formation of nodules that form distally to the A1 pulley.

The epidemiology of trigger finger has been well studied. It occurs more frequently in women, on the dominant side, and in the sixth decade of life. The most affected finger is the thumb, although the occurrence of the trigger is also common in the other fingers.[4] The symptoms vary from a slight local discomfort to the formation of a tendon blockage, which leads to a deficit in actively extending the finger and to the finger remaining fixed in a flexed position.[5] Trigger finger also appears to be linked to other diseases, such as rheumatoid arthritis, gout, carpal tunnel syndrome, De Quervain disease, and diabetes.[6,7] Quinnell[1] classified the trigger finger using 5 types during flexion and extension: normal movement (type 0), uneven movement (type I), actively correctable (type II), passively correctable (type III), and fixed deformity (type IV) (**Table 1**). Trigger finger is one of the most common conditions encountered by hand surgeons.

There are several treatment options available for trigger fingers. Less invasive measures such as

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Discipline of Hand and Upper Limb Surgery, Department of Orthopedics and Traumatology, UNIFESP – Federal University of São Paulo, Rua Borges Lagoa 786, São Paulo City, Cep: 04038-031 São Paulo, Brazil
* Corresponding author.
E-mail address: edsonsasahara@ig.com.br

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Table 1
Quinnell classification of trigger finger

Type	Clinical Symptoms
0	Normal movement
I	Uneven movement
II	Actively correctable
III	Passively correctable
IV	Fixed deformity

Data from Quinnell RC. Conservative management of trigger finger. Practitioner 1980;224:187–90.

splinting and corticosteroid injections are well described. Patients may even experience spontaneous cure or a disappearance of their symptoms. However, many patients will ultimately require surgery for release of the A1 pulley.[1,5,6,8–13]

Splinting can result in resolution of symptoms. One study found a 54% resolution of symptoms in patients splinted for at least 6 weeks.[14] However, for splints to be effective they require many hours of wearing, which can be challenging for patients. A corticosteroid injection administered to the flexor tendon sheath has been demonstrated to produce good results with about 50% improvement after 1 injection.[1,6,9–13,15] However, this technique can result in a relapse rate of up to 29%, and patients are limited in the number of steroid injections they can receive.[10]

Open surgical release is the gold standard, and has a high rate of success with minimal morbidity. Recurrence and persistence can occur, often attributable to technical error of inadequate release.[16] Other complications such as painful scarring, infections, and nerve damage have been reported.[17,18] Open technique is a surgical procedure that requires an incision and appropriate surgical instruments. Given the predictable anatomy of the trigger finger, less invasive and costly measures have been sought for the treatment of trigger fingers.

The delicate tenotomy described in 1958 by Lorthioir[19] was an early description of a minimal approach to the trigger finger. Since that time many other investigators have reported good results using percutaneous release of the A1 pulley.[5,20–28] The authors performed a percutaneous release in 76 triggers fingers of 65 patients and achieved a remission rate of 96%, with 3 recurrences. There was no need to convert any intervention to the open method.[29] **Table 2** presents a literature review of percutaneous release, which reveals a high cure rate with few complications (**Table 3**).

INDICATIONS AND CONTRAINDICATIONS

Percutaneous release can be performed in patients with trigger finger of Quinnell classification types II to IV (see **Table 1**).

Percutaneous release should not be performed in a type I finger, which has a history of catching, though this is not demonstrable on physical examination (active triggering is necessary to confirm complete sectioning of the pulley). This technique should also not be performed if synovectomy or tenosynovectomy is a concern, for example in rheumatoid patients.

SURGICAL TECHNIQUE

The technique applied was proposed by Eastwood and colleagues[5] in 1992.

Anatomy

Before proceeding the surgeon must have a thorough understanding of the location of the A1 pulley, which can be determined using palmar surface landmarks. Anatomic studies indicate that the distance from the palmar digital crease to the proximal interphalangeal crease is approximately equal to the distance from the palmar digital crease to the proximal edge of the A1 pulley. Another finding is that the A2 pulley can be preserved by terminating the A1 pulley release 5 mm proximal to the palmar digital crease (**Fig. 1**). Landmarks of the A1 pulley include for the index finger the radial border of the pisiform proximally and the midline of the digit distally, and for the small finger the ulnar border of the scaphoid tubercle proximally

Table 2
Percutaneous release

Authors,[Ref.] Year	Method	Sample	Complications	Cure (%)
Sato et al,[29] 2004	Percutaneous	76 fingers	3 recurrences	96
Eastwood et al,[5] 1992	Percutaneous	35 fingers	2 partial relief	94
Ragoowansi et al,[26] 2005	Percutaneous	240 fingers	10 recurrences	94
Blumberg et al,[25] 2001	Percutaneous	30 fingers	1 recurrence	97