Trigger fingers are among the most common pathologies affecting the hand, and thus, among the most common complaints treated by the hand surgeon. Multiple modalities have been utilized to address this problem including rest and splinting, steroid injections, and operative release. Although some patients may benefit from steroid injection alone, diabetics have shown poorer response to conservative measures with a failure rate of 34%. This rate causes some clinicians to advocate for early surgical release.

Surgical release has traditionally been performed in an open manner. However, percutaneous release of trigger digits has been proven to be safe and effective. Multiple percutaneous techniques exist: tactile versus ultrasound guided and endoscopic blade versus needle based. Regardless of the technique utilized, percutaneous release has proven to have similar equivalency to open release.

Over several decades, after trying and reviewing several techniques, the senior author has settled on the “pressure push technique.” This technique relies on superficial oblique insertion of a stiff 16-gauge needle proximal and superficial to the first annular (A1) pulley, pushing it distally over the pulley, and then pressing it to progressively divide the pulley several strands at a time using only the point of the needle. Percutaneous release of trigger digits was most easily accomplished in the middle and ring fingers, where both neurovascular bundles are well situated away from the midline of the A1 pulley and can be easily identified by palpation.

Previously, this author did not perform the procedure on the thumb secondary to the proximity of the neurovascular bundles to each other. This is especially apparent proximally, where the radial neurovascular bundle crosses over the flexor pollicis longus tendon immediately proximal to the A1 pulley. It has been shown, through cadaveric dissections, that the radial digital nerve crosses the path of the A1 pulley in close proximity to the site of surgical release.

Despite this, many clinicians have been performing percutaneous trigger thumb releases. Percutaneous release has been reported to be safe and as effective as open surgical release of the A1 pulley. Many complications have been reported from percutaneous trigger thumb release including insufficient release, tendon laceration, bowstringing, infection, stiffness, weakness, and digital artery pseudoaneurysm. Digital nerve injury has also been reported in percutaneous release of trigger thumbs. This is not surprising owing to the proximity of the radial digital nerve crossing in the area of surgical release. Given this, some surgeons advocate for open release of the thumbs.

To further understand the anatomy and safety of percutaneous release of the thumb, the authors performed and recorded cadaveric dissections. The anatomic dissections confirmed the radial digital nerve of the thumb crossing immediately proximal to the A1 pulley as illustrated in Figure 1. Utilizing the senior author’s pressure push technique previously applied only to the other digits, the potential damage to the nerve can be obviated by angling...
the needle proximally to distally after inserting it through
the skin just proximal to the MP flexion crease (Fig. 2). The point of the needle is then used to divide the A1 pul-
ley utilizing the pressure push technique. The round shaft of the needle serves to push the nerve out of the way, al-
lowing the procedure to be done safely as demonstrated in the video (see video 1, Supplemental Digital Content 1, which displays cadaveric and actual patient demonstration of percutaneous trigger thumb release. This video is available in the “Re-
lated Videos” section of PRSGlobalOpen.com or at http://links.lww. com/PRSGO/A773.

Fig. 2. Location of insertion of 16-gauge needle, just proximal to the MP flexion crease.

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REFERENCES
1. Lange-Riess D, Schuh R, Hönle W, et al. Long-term results of surgical release of trigger finger and trigger thumb in adults. Arch Orthop Trauma Surg. 2009;129:1617–1619.
2. Luther GA, Murthy P, Blazar PE. Cost of immediate surgery versus non-operative treatment for trigger finger in diabetic patients. J Hand Surg Am. 2016;41:1056–1063.
3. Ryzewicz M, Wolf JM. Trigger digits: principles, management, and complications. J Hand Surg Am. 2006;31:155–146.
4. Werthel JD, Cortez M, Elhassan BT. Modified percutaneous trigger finger release. Hand Surg Rehabil. 2016;35:179–182.
5. Mishra SR, Gaur AK, Choudhary MM, et al. Percutaneous A1 pul-
ley release by the tip of a 20-g hypodermic needle before open surgical procedure in trigger finger management. Tech Hand Up Extrem Surg. 2013;17:112–115.
6. Lapègue F, André A, Meyrignac O, et al. US-guided percutaneous release of the trigger finger by using a 21-gauge needle: a prospective study of 60 cases. Radiology. 2016;280:493–499.
7. Zhao JG, Kan SL, Zhao L, et al. Percutaneous first annular pul-
ley release for trigger digits: a systematic review and meta-analysis of current evidence. J Hand Surg Am. 2014;39:2192–2202.
8. Wang J, Zhao JG, Liang CC. Percutaneous release, open surgery, or corticosteroid injection, which is the best treatment method for trigger digits? Clin Orthop Relat Res. 2013;471:1879–1886.
9. Schubert MF, Shah VS, Craig CL, et al. Varied anatomy of the thumb pulley system: implications for successful trigger thumb release. J Hand Surg Am. 2012;37:2278–2285.
10. Cebesoy O, Kose KC, Ballaci ET, et al. Percutaneous release of the trigger thumb: is it safe, cheap and effective? Int Orthop. 2007;31:345–349.
11. Gül F, Kose O, Ercan EC, et al. Open versus percutaneous release for the treatment of trigger thumb. Orthopedics. 2013;36:e1290–e1294.
12. Galabi D, Ceken GS, Bekler HI, et al. A study of 60 patients with percutaneous trigger finger releases: clinical and ultrasonographic findings. J Hand Surg Eur Vol. 2014;39:699–703.
13. Taylor SA, Osei DA, Jain S, et al. Digital artery pseudoaneurysm following percutaneous trigger thumb release: a case report. J Bone Joint Surg Am. 2012;94:e6.