

Percutaneous Trigger Thumb Release: Special Considerations

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Trigger fingers are among the most common pathologies affecting the hand, and thus, among the most common complaints treated by the hand surgeon.¹ 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%.^{2,3} 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.^{4,5} Multiple percutaneous techniques exist: tactile versus ultrasound guided and endoscopic blade versus needle based.^{6,7} Regardless of the technique utilized, percutaneous release has proven to have similar equivalency to open release.^{7,8}

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.⁹

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.^{10,11} Many complications have been reported from percutaneous trigger thumb release including insufficient release, tendon laceration, bowstringing, infection, stiffness, weakness, and digital artery pseudoaneurysm.^{9,12,13} Digital nerve injury has also been reported in percutaneous release of trigger thumbs.¹¹ 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

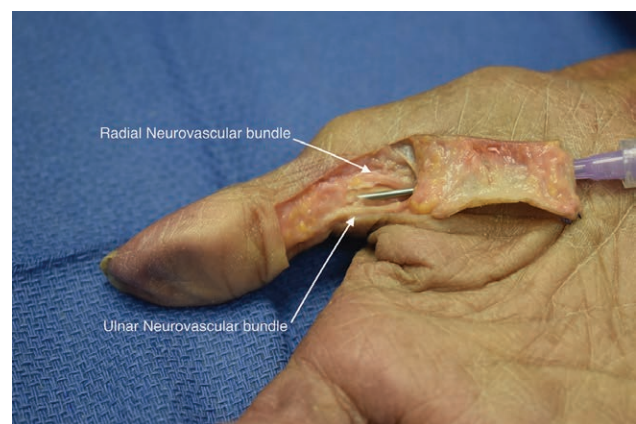


Fig. 1. Division of first annular (A1) pulley on a cadaver with preservation of both neurovascular bundles. Note the radial neurovascular bundle crossing proximal to the area of division.

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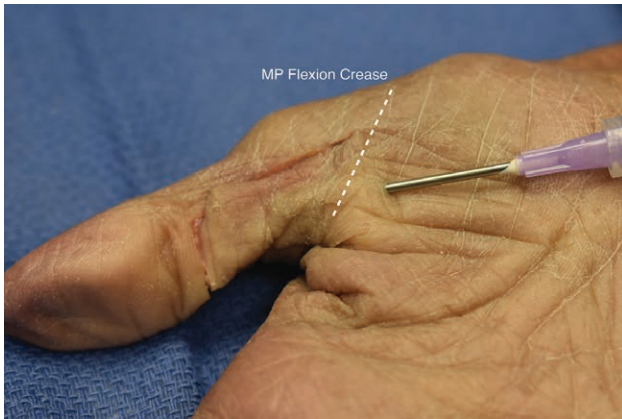


Fig. 2. Location of insertion of 16-gauge needle, just proximal to the MP flexion crease.



Video Graphic 1. 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 “Related Videos” section of PRSGlobalOpen.com or at <http://links.lww.com/PRSGO/A773>.

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 pulley utilizing the pressure push technique. The round shaft of the needle serves to push the nerve out of the way, allowing 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 “Related Videos” section of PRSGlobalOpen.com or at <http://links.lww.com/PRSGO/A773>). Utilizing this technique, and with this understanding, the senior author was able to perform percutaneous trigger thumb

releases in the clinical setting without any incidence of digital nerve injury.

We were able to conclude that percutaneous trigger thumb release using the pressure push technique is a safe and effective method to treat trigger thumb. This concept is illustrated in **Supplemental Digital Content 1** showing some anatomy animation with actual safe and effective percutaneous trigger thumb release.

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