

Trigger finger: ultrasound-guided injection with an in-plane approach under the A1 pulley

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A 65-year-old man was referred to our outpatient clinic with a 3-month history of hand pain and locking of the index finger during active flexion–extension activity. His medical history was unremarkable. Musculoskeletal examination revealed tenderness, nodules, and locking of the metacarpophalangeal (MCP) joint of the right index finger. Laboratory tests were within normal limits. Longitudinal ultrasound imaging showed a thickening of the first annular (A1) pulley (Figure 1A), and axial ultrasound imaging showed synovial sheath effusion (Figure 1B). Real-time ultrasound-guided methylprednisolone acetate with a local anesthetic injection was performed under the A1 pulley (Figure 1C), and follow-up examinations were recommended.

Trigger finger (TF) is caused by a disparity in the size of the flexor tendons and the surrounding retinacular pulley system at the A1 pulley which overlies the MCP joint. Occupational or repetitive activities, local trauma, degenerative disorders, inflammatory rheumatic diseases, or diabetes mellitus can be underlying etiological factors [McAuliffe, 2010]. The diagnosis of TF remains clinical, and treatment options include activity modification, splinting, nonsteroidal anti-inflammatory drugs, injection or physical therapy. If symptoms do not improve with conservative therapy after 4–6 weeks, a local glucocorticoid injection may be suggested prior to surgical therapy [Salim *et al.* 2012]. Although blind injections are largely successful, severe complications such as tendon rupture and digital necrosis have been reported after injections due to steroid infiltration into unintended areas, including tendons and vessels [Park and Dumanian, 2009; Fitzgerald *et al.* 2005; Kara *et al.* 2014]. Thus, ultrasound-guided injections are more reliable than blind injections due to real-time imaging. Two approaches may be taken for TF injections; the in-plane approach or

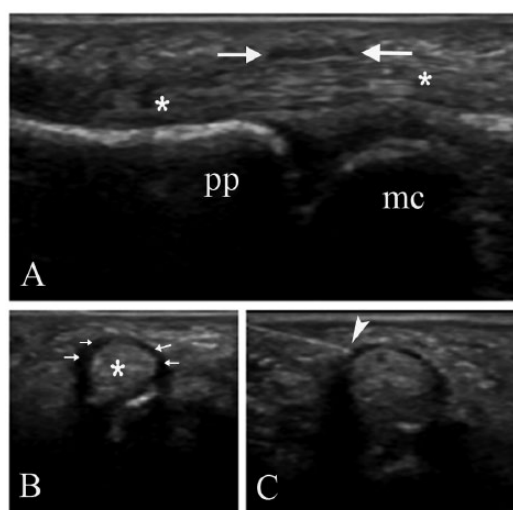


Figure 1. Longitudinal view (A) and axial view (B) of right second flexor tendons centered at the metacarpophalangeal (MCP) joint. Thickened A1 pulley (arrow) and synovial sheath effusion (thin white arrow). A1 pulley injection with methylprednisolone acetate under local anesthetic. The needle (arrowhead) is seen in the space between the A1 pulley and the flexor digitorum tendons (C). mc, metacarpal; pp, proximal phalanx; *, flexor digitorum tendons.

the out-of-plane approach. The needle enters the skin at the side of the probe in the in-plane approach and it enters the skin away from the probe in the out-of-plane approach. Despite the viability of both options, the out-of-plane approach provides poorer visualization of the needle, because only one short segment of the needle is visible in this approach. In the present case, because the needle tip is identified more easily, a lateral-to-medial in-plane approach was used successfully.

In conclusion, ultrasound-guided injections are more accurate and safer than blind applications

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and the in-plane approach is more reliable than the out-of-plane approach.

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Conflict of interest statement

The authors declare that they have no conflict of interest.

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