

## How can you examine intersection syndrome via ultrasound? A technical description

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Intersection syndrome is an overuse disorder that is often misdiagnosed as De Quervain tenosynovitis and it must be considered in the differential diagnosis of radial wrist pain. Recently, after physical examination for musculoskeletal problems, there has been a surge in interest in ultrasonographic examination among physiatrists. However, no technical description of dynamic ultrasonographic examination can be found in the literature nor in the ultrasound textbooks. In this letter, we describe a technique on how to examine the intersection syndrome with ultrasound.

There are two types of intersection syndrome: Proximal intersection syndrome occurs around the cross-over of first dorsal extensor compartment (abductor pollicis longus [APL] and extensor pollicis brevis [EPB]) and second dorsal extensor compartment (extensor carpi radialis longus [ECRL] and extensor carpi radialis brevis [ECRB]), while distal intersection syndrome occurs at the crossing point of third dorsal extensor compartment (extensor pollicis longus [EPL]) and second dorsal compartment (ECRL and ECRB).<sup>1,2</sup> In proximal intersection syndrome pain, tenderness, swelling and/or crepitus with

flexion and extension of the wrist are localized on the radial side of the distal forearm about 4 cm proximal from the Lister's tubercle (LT), while the symptoms in distal intersection syndrome occur at dorsolateral aspect of the hand approximately 1 cm distal to the wrist crease.<sup>3,4</sup> The sonographic findings supporting the diagnosis of intersection syndrome are thickening of the tendons examined, peritendinous fluid, and hypervascularity on Doppler sonography.<sup>4</sup> First, we suggest placing the ultrasound probe so that its orientation marker faces the radial side of the wrist and finding LT of the radius. The compartment which is at the radial side of LT is the second dorsal extensor compartment and the compartment which is at the ulnar side of the LT is the third dorsal extensor compartment. When you move the probe radial to the second dorsal extensor compartment you can easily find the first dorsal extensor compartment. To scan proximal intersection area, the first find second dorsal extensor compartment and move the probe proximally and follow the second compartment you will see that APL and EPB (first dorsal extensor compartment) jumping

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**Figure 1.** Dynamic ultrasound examination of intersection syndrome. (Please scan QR code to watch the video).

over it. To examine distal intersection syndrome, similarly, place the ultrasound probe so that its orientation marker faces the radial side of the wrist and find LT then you will see that EPL (third extensor compartment) is found at the ulnar side of LT. Then, start to move the probe distally, until you see the cross-over of EPL over the second compartment (ECRL and ECRB) (Figure 1). Both intersection areas should be evaluated in both transverse and longitudinal scans and the examination should always be performed comparatively.<sup>5</sup>

In conclusion, differential local anesthetic injections may help to support the diagnosis or to differentiate between intersection syndrome and De Quervain syndrome.<sup>6</sup> We believe that finding and examining proximal and distal intersections would also enable and guide

therapeutic injections, as well as diagnostic local anesthetic injections that can be performed for differential diagnosis.

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