Extensor Pollicis Brevis Subcompartment Characteristics in the 1st Dorsal Extensor Compartment: An Anatomic Study

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Disclosure/Financial Support: None of the authors has a financial interest to disclose.

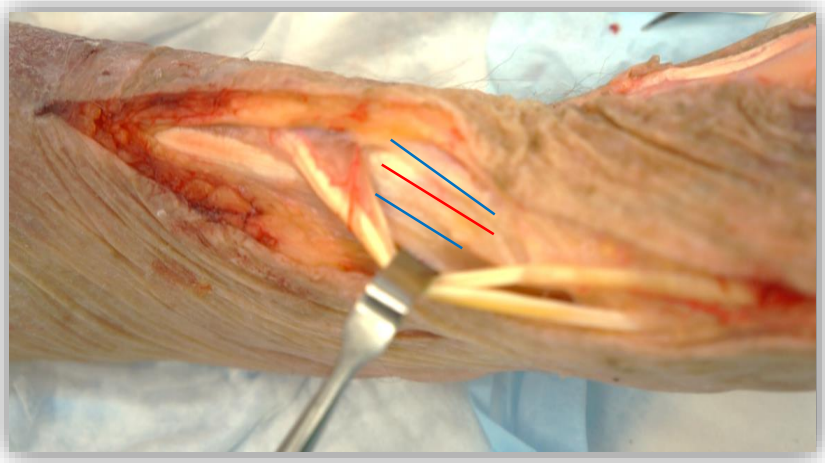
INTRODUCTION: DeQuervain's tenosynovitis is a common complaint, often treated with steroid injections alone, but certain patients ultimately require surgical release of their 1st dorsal compartment. We hypothesize that identifying patients with a subcompartment during their initial evaluation may speed their recovery. The purpose of this study was to better characterize the 1st dorsal compartment anatomy and explore the potential for radiographic correlation with certain findings.

METHODS: In ten (10) freshly preserved cadaveric arms, the 1st dorsal extensor compartment was dissected. Data about the arms were collected including the presence of an EPB subcompartment. Standard posterior/anterior (PA), lateral and oblique x-rays of each wrist were also obtained using a portable x-ray machine (Carestream DRX-Revolution, Rochester NY).

RESULTS: Nine of the 10 cadaver arms were from male patients and 60% (6) were left upper extremities. The average age of the donors was 73.7 ± 16.05 years. The average diameter of the 1st dorsal compartment was 13.3± 1.3 mm. The mean 1st dorsal compartment length was 29.7 ± 10.2 mm. The abductor pollicis longus tendon was composed of a mean of 3.3 ± 1.3 slips. The extensor pollicis brevis tendon had a single slip in all ten specimens. Seven of ten 1st compartments (70%) had an identifiable EPB subcompartment with an average length of 80.0 ± 10.3% of the 1st dorsal compartment length. Four (57%) subcompartment sheaths were characterized as thick and three (43%) as thin. All 4 thick subsheaths continued well-beyond the edge of the distal radius (min 35%, max 74%) whereas only 1 of 3 thin subsheaths continued beyond the distal radius. An osseous ridge within the compartment was identified in 2 specimens, both of which were associated with a thick EPB subcompartment.

CONCLUSION: Seventy percent of the specimens studied had an EPB subcompartment within the 1st dorsal extensor compartment and the majority of these were thick and well-defined, spanning from a portion of the bony tunnel to beyond the distal radius edge. Such characteristics may contribute to the failure of non-operative interventions. Preoperative radiographs may suggest the presence of thick subcompartments which may, in turn, prompt either ultrasound guided injection of the compartment or more expeditious surgical intervention in refractory cases.

(Above Left) In the two specimens with thick septums and bony ridges on dissection, the three view x-rays suggest that the subsheath osseous ridge is visible (yellow arrows).



(Above Right) With the EPB and APL retracted, the edges of the 1st dorsal extensor compartment (blue lines) and the subsheath ridge (red line) are shown.