Increased Palmaris Longus Tendon Detection by Ultrasound, but Physical Exam Sufficient for Identification of Appropriate Graft Material

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• **Summary:** We document detection rates of the palmaris longus tendon based on either physical examination or ultrasound examination and find that there is no significant difference in detection rates between these two methods in identifying viable graft material.
Introduction

- Identifying the palmaris longus (PL) tendon pre-operatively has clinical utility in determining which patients will be able to undergo tendinous reconstruction using the PL as graft material.

- To our knowledge, there has been no study examining the utility of ultrasound in identifying the PL tendon as appropriate graft material.
Goal and hypothesis

• **Goal**: to describe the utility of ultrasound in detecting the PL tendon and whether this increased detection can lead to increased utilization of the tendon as graft material.

• **Hypothesis**: the physical exam (PE) will be an inferior screening tool when compared to ultrasound in patients with larger wrist circumferences and BMI.
Study Design

- At random, patients were selected from an orthopaedic clinic and underwent bilateral physical exam by a hand-fellowship trained orthopaedic surgeon.

- Patients subsequently underwent ultrasound imaging of their wrist by a musculoskeletal-trained sonographer who was blinded to physical exam.

- Wrist circumference measurements, BMI, and patient demographics were recorded. Student t-tests for continuous data and $X^2$ or Fisher exact tests for categorical data were utilized as appropriate.

- High-frequency ultrasound was considered gold standard when calculating sensitivity, specificity, and predictive values.
Example of physical exam maneuver
Results: Demographics

- 93 wrists were surveyed from 47 patients.
- Average BMI was 29.03 ± 6.98.
- Average Wrist Circumference was 17.20 ± 1.62cm.
- 59.6% was female and 40.4% was male
Results

- Physical exam was positive in 80 wrists and negative in 13 wrists.
- Ultrasound was positive in 85 wrists and negative in 8 wrists.
- There were 78 true positives, 2 false positives, 7 false negatives, and 6 true negatives.
- Identification rate of the PL tendon by ultrasound and physical exam was 91.2% and 86.0%, respectively.
- Of the 80 PE positive PL tendons, 2 were ultrasound negative.
- Sensitivity of physical exam was 91.8%, specificity was 75.0%, the positive predictive value was 97.5%, and the negative predictive value was 46.2%.
- There was no association between BMI or wrist circumference when comparing the true positive, true negative, false positive, or false negative groups (BMI: p=.277; wrist circumference: p=.636).
Results: aberrant tendons

• All of the false negative physical exams were found to have small, faintly-visible, and poorly organized PL tendons on ultrasound.

• An example of an aberrant tendon:
Conclusions: Main Take Away Points

- On the basis of PE alone, the presence of a PL tendon that is appropriate for use as graft material can be ascertained, thereby negating the utility of US for identification of the PL tendon.

- Patient BMI or wrist circumference did not have an association with differences in detection rates between US and PE.
References