Clinical Assessment of the Palmaris Longus – Accuracy of common tests

Introduction
The Palmaris longus (PL) is a vestigial muscle that has been shown to vary in occurrence in various populations. Numerous tests have been described to detect the presence of the Palmaris Longus in the living patient. The first such test was described by Schaeffer in 1909(1). Other tests were later described by Thompson, Mishra, Pushpakumar, Gangata and many others(2-5). The numerous tests rely on different wrist, hand and thumb motions and hence should have different accuracies in detecting the presence of the tendon. With numerous tests available for the surgeon it is important that it is clear to the clinician which tests bring out the tendon better. We thus set out to determine which of ten common tests used to detect the PL is better at demonstrating this tendon at the wrist.

Materials And Methods
We conducted a prospective study of students of the paramedical and nursing schools and of patients attending the orthopaedic surgical outpatient clinic. The subjects were recruited consecutively and subjected to 10 tests to detect the presence of the Palmaris Longus. The patients were examined by a resident in orthopaedics assisted by two students of clinical medicine (equivalent of physician assistant) who had all been trained on how to identify the tendon in a sample of volunteers prior to the commencement of the study. A negative test on all tests was judged to mean absence of the tendon while a positive result on any test was judged to be positive. Participants provided written informed consent and assent was sought from the next of kin in the case of those aged below 18 years. The study was approved by the hospital ethics board and permission was granted by the school authorities.

Results; The Standard test described by Schaeffer was the most accurate while the open hand sign described by Bhattacharya was the least accurate.

Conclusion; Tests that incorporate wrist flexion, thumb abduction, opposition and finger flexion are best at bringing out the PL tendon. Clinicians should be aware of this as they counsel patients who need tendon grafts. Studies aiming at detecting the presence of the PL would be more accurate were they to use these tests.
digits(7) (Figure 7). The Lotus sign is done by bringing the fingers and thumb together to form a cone (Figure 8) while in the open hand method, the patient is asked to fan out all the fingers and slightly flex the wrist (Figure 9). The Bhattacharya test is done wrist flexion against resistance(8) (Figure 10).

Patients with obvious hand and wrist deformities, previous hand and wrist injuries and previous surgery to the hand and/or wrist were excluded. Participants provided written informed consent and assent was sought from the next of kin in the case of those aged below 18 years. The study was approved by the hospital ethics board and permission was granted by the school authorities.

Data was collected by a questionnaire and entered into Epidata program and exported to SPSS v 11.5 (SPSS Inc., Chicago, Illinois).

**Results**

We examined 800 subjects (1600 hands), the majority (76.1%) of whom were students and right handed (94.4%). There were 391 (48.9%) males and 409 (51.1%) females. The subjects’ ages ranged from 12 to 70 years with a mean age of 25 years. The overall prevalence of the Palmaris longus was 95.6%
giving an absence rate of 4.4%. The Standard test described by Schaeffer was the most accurate while the open hand sign described by Bhattacharya was the least accurate (Table 1). The different tests use various wrist and finger movements to make the Palmaris longus tendon prominent (Table 2).

**Discussion**
The Standard test was able to detect 98.1% of all patients who had the tendon. This test works by wrist flexion, thumb abduction, opposition and finger flexion. The Open Hand test detected the least number of participants with the tendon. The test works by wrist flexion. The Palmaris Longus inserts into the palmar aponeurosis and is hence able to act as a wrist flexor and a tensor of the palmar aponeurosis. It is also reported to send a slip to the abductor pollicis brevis and hence plays a role in thumb abduction (9).

The tests with higher accuracies would be expected to be more useful in the clinical setting to detect the presence of the PL. Though all tests have accuracies of over 89%, our study has shown that tests that incorporate wrist flexion, thumb abduction, opposition and finger flexion are best at bringing out the Palmaris tendon.
The limitation of the standard test is that it is difficult to demonstrate to the patient and difficult for the patient to perform. Clinicians should be aware of this as they counsel patients who need tendon grafts. Studies aiming at detecting the presence of the Palmaris longus would be more accurate were they to use these tests.

**Conclusion**

The Standard test best demonstrates the Palmaris longus and is recommended for clinical testing of the muscle.

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**References**