

Absent Palmaris Longus: A Case Report & A Live Study

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Abstract

Background: Palmaris longus (PL) has received a growing interest because of its role in constructive surgery. As the agenesis of PL shows a strong racial variation, its prevalence in Eastern India will further confirm this phenomenon.

Methods: A total of 600 subjects comprising 335 males and 265 females aged 8 - 60years were studied to assess the prevalence of agenesis of the PL in the population of Eastern India.

Results: The overall prevalence of absence both unilaterally and bilaterally in the two sexes was 2% which includes 0.5% in males & 1.5% in females. In males, unilateral absence was 0.33% & bilateral absence was 0.16%. In females, unilateral absence was 1% & bilateral absence was 0.5%. Along with that, here we have showed a case report which shows U/L absence of PL along with hypoplastic Flexor Digitorum Superficialis.

Conclusion: Results of this finding is compared with the prevalence of agenesis of PL in other populations which showed some difference.

Keywords: Palmaris longus, constructive surgery, agenesis, prevalence.

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I. Introduction

PL is a small vestigial muscle & it is phylogenetically degenerating. It is a slender muscle which originates from the medial epicondyle and from adjacent intermuscular septa. The muscle is characterised by its short belly and long tendon¹. The belly gives rise to a long slender tendon that is becomes continuous as palmar aponeurosis^{1,2,3}. This muscle is one of the most variable muscles in humans. The variations may be duplication (digastrics) or the presence of accessory palmaris longus⁴. Functionally, PL is a weak flexor of the wrist & is considered negligible. However, there is a growing interest in the existence of the muscle because its tendon is most frequently harvested for reconstructive plastic and hand surgery⁸. PL tendon along with various combinations is used to repair oncologic defects of head and neck, arthritis of the thumb and ptosis in children⁵. The prevalence of the agenesis of this muscle as reported in texts is about 15%. But a higher prevalence (24%) was reported in North American Caucasians⁶. Ceyhan and Mavt⁷, reported a much higher prevalence of agenesis (63.9%) in the Gaziantep population in Turkey. Other studies in the Asian population showed that the incidence is 3.4% in Japanese⁸ and 4.6% in Chinese⁹ respectively. Within Africa, available information showed that the incidence is 1.02% in a Ugandan population¹⁰.

Materials And Methods

A total of 600 subjects consisting of 335 males and 265 females aged 18 - 25 years were used to assess the prevalence of agenesis of PL. The exercise was conducted with four different methods of assessment; standard test (Schaeffer's test), Thompson's test, Mishra's test I and Pushpakumar's "two-finger sign" method¹⁹. Each subject was initially asked to do the standard test. Where palmaris longus tendon was not sufficiently visualized in this technique, Thompson's, Mishra's and Pushpakumar's "two-finger sign" tests were used to confirm its absence.

Fig. 1: Standard method



Fig. 2: Thompson's method



Fig. 3: Mishra's method



Fig. 4: Pushpakumar's method



II. Observation

- Out of 600 subjects, it's found that PL is absent in 12 cases.
- Out of 12 subjects, PL is absent U/L in 4 cases (0.66%) & in 8 subjects, it's absent B/L (1.33%).
- Out of 8 subjects in whom it's U/L absent, in 7 cases it's absent on left side & in 1 cases it's absent on right side.
- The subjects, in whom PL is absent, 9 are females & 3 are males.

Table 1: Incidence of absence of PL

T o t a l (6 0 0)	A b s e n t P L (2 %)	B / L a b s e n t (0 . 6 7 %)	U / L a b s e n t (1 . 3 3 %)
M (3 3 5)	3 (0 . 5 %)	1 (0 . 1 6 %)	2 (0 . 3 3 %)
F (2 6 5)	9 (1 . 5 %)	3 (0 . 5 %)	6 (1 . 0 %)

III. Case Report

During routine dissection in the dept. of Anatomy, IMS & SUM Hospital, BBSR in a male cadaver of 54 year of age, a variation is seen. In right hand, the PL was normal whereas on the left side, it was absent. Along with that, on left hand there was hypoplastic Flexor Digitorum Superficialis tendon.

Fig.5:Absenceof Palmaris onguis



Fig. 6: Hypoplastic Flexor Digitorum Superficialis



Fig. 7: Hypoplastic Flexor Digitorum Superficialis tendon



IV. Discussion

PL tendon along with various combinations is used to repair oncologic defects of head and neck, arthritis of the thumb and ptosis in children. Although the PL is congenitally absent in nearly 15% of individuals worldwide, but a wide variation in the frequency of its absence is found among different population groups^{11, 12}. A higher prevalence (24%) was reported in North American Caucasians⁶. Within Africa, available information showed that the incidence is 1.02% in a Ugandan population¹³. Different studies on different populations show that incidence of agenesis of PL is 6% in Chinese¹¹, 3.4% in Japanese¹⁴, 6.7% in Nigeria¹⁵, 20.2% in Indians patients¹⁶, 24% in North American Caucasians¹⁷, 26.6% in Turkish population¹⁸, 25% in Nigerian population¹⁹ and 38.6% in Bahraini population of Arabian region²⁰. The study revealed that U/L agenesis is more common than B/L agenesis which is in accordance with the studies done by other researchers^{21, 11, 22}. It's also found that agenesis of PL is more common in women & this is also in accordance with the studies done by other researchers^{20, 23}. But some studies also reveal that there is no significance difference in the incidence of agenesis of PL muscle^{21, 11}.

V. Conclusion

Thus, it's found that, a standard prevalence and sex dominance of absence of the Palmaris longus can not be applied to all populations. This indicates that the absence of the muscle may be multifactorial with regional variation and hereditary correlation, which require further studies.

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