



# CLINICAL ASSESSMENT OF ABSENCE OF PALMARIS LONGUS IN WESTERN MAHARASHTRA REGION

Deepti O. Kulkarni<sup>1</sup>, Sonali V. Khanapurkar<sup>2</sup>, Deepak Joshi<sup>3</sup>

<sup>1</sup>Assistant Professor, S.K.N. Medical College, Pune, Maharashtra, India; <sup>2</sup>Assistant Professor, B.J. Medical College, Pune, Maharashtra, India;

<sup>3</sup>Professor & HOD, Govt. Med. College, Nanded, Maharashtra, India.

## ABSTRACT

**Background:** Palmaris Longus (PL) is a thin, tendinous superficial flexor muscle of forearm. In non-human primates, it is functionally active but considered as vestigial and showing ethnic variations in humans<sup>10</sup>. But it is commonly used in different hand and plastic surgeries<sup>4</sup>. So clinical tests to detect the presence of tendon are found to be very useful for surgeons.

**Aim:** The present study is done to assess the agenesis of Palmaris Longus, unilateral and bilateral by using simple clinical tests.

**Method:** For this study, 240 medical and nursing students of 1st years(boys and girls) were assessed using standard clinical tests. Those with deformities, injuries were excluded. Result: The study showed unilateral absence in 15% and bilateral absence in 8.33%. Absence was more common on left side but not statistically significant. Absence of tendon was more common in females and found statically significant.

**Conclusion:** the present study correlates with previous findings. Combination of all clinical tests is found to be useful to detect the absence of Palmaris Longus

**Key Words:** Variations, Flexor, Vestigial, Tendon, Ethnically

## INTRODUCTION

Palmaris Longus is a vestigial muscle which also shows ethnic variations in prevalence of its absence. It is a muscle in superficial flexor compartment of forearm and is mainly tendinous. It is weak flexor of wrist and tensor of Palmar Aponeurosis.<sup>10</sup>

It is commonly used muscle in different surgeries like tendon graft, lip augmentation/ escalation<sup>4</sup>, ptosis correction.<sup>6</sup>

Various tests are there to detect the presence of Palmaris Longus in living patients, and have been studied in different ethnic population. Its correlation with body side and sex was also studied.<sup>3 10 11</sup>

Present study is to determine the incidence of unilateral and bilateral agenesis of Palmaris Longus & its association with hand dominance and sex in western Maharashtra population.

## MATERIAL AND METHOD

We examined 240 Medical & nursing students (114 males & 126 females) of 1<sup>st</sup> year, in western Maharashtra region. The average age was between 17-21 years. Those with obvious hand & wrist deformities or injuries, any history of surgery were excluded. Informed consent was taken from participants. The study was approved by ethical committee of concerned institute.

Clinical tests which were done-

1. Schaeffer's test<sup>1</sup>- opposition of thumb to little finger with flexion at wrist.
2. Thompson's test<sup>2</sup>- opposition of thumb over clenched fist with flexion at wrist.
3. Mishra's 1<sup>st</sup> test<sup>7</sup>- hyperextension of fingers at metacarpophalangeal joint with flexion of wrist.
4. Mishra's 2<sup>nd</sup> test<sup>7</sup>- abduction of thumb against resistance with slight palmar flexion of wrist.
5. Pushpakumar's 2 finger sign<sup>9</sup>- full extension of index and middle finger with opposed thumb over medial 2 fingers.

Corresponding Author:

Dr. Deepti O. Kulkarni, Assistant Professor, S.K.N. Medical College, Pune, Maharashtra, India.

E-mail: deepti\_mok@yahoo.com

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The tendon of Palmaris Longus is seen by using standard test of Schaeffer's. if it is not visible, then other 4 tests were also done to confirm the result, also to differentiate it from tendon of Flexor Carpi Radialis.

Photo: Black arrow- Palmaris Longus.

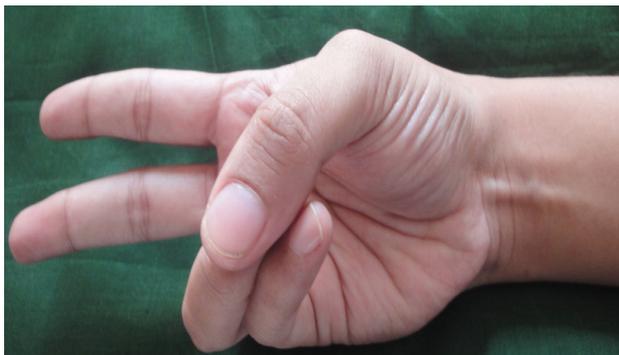
1. Schaffer's Test



2. Thompson's test



3. Pushapakumar's 2 finger sign-



White arrow- Flexor carpi Radialis.

4. Mishra's test 1-



4. Mishra's test 2-



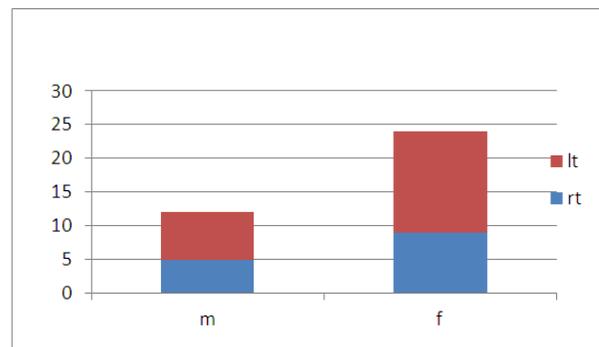
**RESULT**

**Unilateral absence of Palmaris Longus tendon-**

In 36 students = 15%  
 (12 males-10.53%), (24 females-19%)  
 Right side absent- 5.5%, Left side absent- 6%

**Table 1: Unilateral absence of Palmaris Longus-**

Male-12=10.53%		Female-24=19%		Rt	Lt
Rt	Lt	Rt	Lt		
5	7	9	15	5.5%	6%



**Figure 1:** Unilaeral absence of Palmaris Longus in relation with body side and sex.

Rt- right, Lt- Left, m- male, f- female.

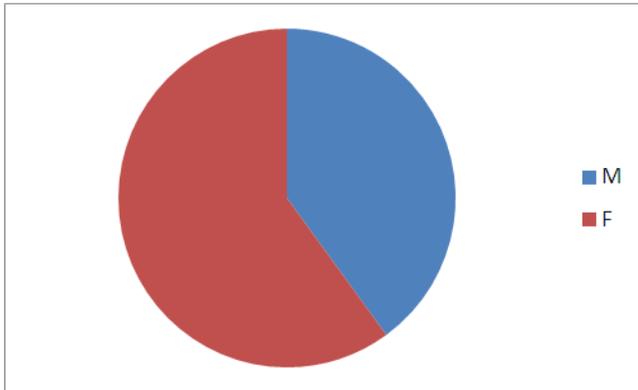
**Bilateral absence of Palmaris Longus –**

In 20 students = 8.33%

In 8 males-7.01%, in 12 females- 9.52%

**Table 2: Bilateral absence of Palmaris Longus.**

Male	Female
8	12
7.01%	9.52%



**Figure 2:** Bilateral absence of Palmaris Longus in relation with sex-

Absence of Palmaris Longus on left side found statistically insignificant- p value = 0.8

Absence of Palmaris Longus in females found stastically significant- p value = 0.004\*

**DISCUSSION**

Long tendon of Palmaris Longus is commonly used as a graft, because of its length, diameter, and easy availability. When harvested it does not produce any deformity.<sup>3</sup>

Its identification is also useful during administration of medicine/ corticosteroids, to relieve pain in carpal tunnel syndrome or arthritis and in median nerve wrist block.<sup>8</sup>

During evolution, Palmaris Longus has become retrogressive degenerating muscle. Its position, size can be altered or may be completely absent. The tendon may be weak, which makes it difficult to identify using clinical tests. In that case USG, MRI can be used.

Schaeffer’s test was 1<sup>st</sup> to be used in 1909 and considered as a standard test. But is difficult to demonstrate and perform. So combination of tests is found to be useful.

As Palmaris Longus is a wrist flexor and tensor of palmar Aponeurosis, and abductor of thumb (as sends slip to abductor pollicis brevis), tests which help in wrist and

finger flexion, thumb abduction and opposition help to make the tendon of Palmaris Longus prominent. Only precaution is to differentiate it from flexor carpi radialis tendon lateral to it in forearm, which is not abductor of thumb, as it ends in forearm. Some tests cannot be used, in median nerve palsy as there is loss of opposition.

Schaffer & Reimann<sup>1</sup> found absence of Palmaris Longus tendon more common on left side, while Thompson found it more common in females also. Racial variation was also found in absence of Palmaris Longus tendon like in North Americans- 24% by Troha, in Chinese- 4.6%<sup>10</sup>

**Table 3: Thompsons<sup>2</sup> study-(north Ireland 300 caucasians-150 males & 150 females.)**

	M	F	RT	LT
16% UL	29	20	29	20
9%BL	15	11		

No significant relation was found with body side &sex.

**Table 4: Sebastian’s<sup>10</sup> study-( in Chinese population-329= 120 males, 209 females, of 7-85 years**

	Rt	Lt	Bilateral
Males	1(0.5%)	7(3.3%)	2(1%)
Females	2(1.7%)	1(0.8%)	2(1.7%)
Total	3(0.9%)	8(2.4%)	4(1.2%)

**Table 5: Study by Gangata<sup>11</sup> in Yoruba tribe Nigeria, Africa-(335 males, 265 females) of 8-60 years.**

	Males		Females	
Unilateral	Rt	Lt	Rt	Lt
	2.4%	3%	2.6%	3.4%
Bilateral	1.5%		0.4%	

In present study, we have found unilateral absence of Palmaris Longus in 15%, while bilateral absence in 8.33%. Absence of tendon in females was found statistically significant.

**CONCLUSION**

According to present study, Palmaris Longus is absent in 15% unilaterally and in 8.33% bilaterally. Thus it shows ethnic variations in its absence. This correlates with previous studies in other ethnic population. This should be kept in mind when using it for surgical procedures.

In present study its absence in females is found statistically significant (9.52%), but its relation with body side

was not significant. These findings are different from previous studies. So its correlation with body side and sex needs more study.

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