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ORIGINAL RESEARCH

INCIDENCE OF ABSENCE OF PALMARIS LONGUS MUSCLE TENDON IN THE MEDICAL STUDENTS OF PRM MEDICAL COLLEGE,BARIPADA: A CROSS SECTIONAL STUDY

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ABSTRACT

Aim: Incidence of absence of Palmaris longus muscle tendon in the medical students

Methods: This study was performed in 400 upper limbs of 200 medical and lab technician students of PRM medical college and hospital, Baripada after obtaining written informed consent from all the participant. For examination of the Palmaris longus muscle tendon five standard clinical methods were used. After explaining the study protocol they were subjected to schaeffer's test, then bunched finger test, hooked finger test, pushpakumar's test and thompson's test with these clinical methods, presence or absence of the Palmaris longus muscle tendon were registered.

Results:

Outof400students,therewere216(54%)femalesand184(46%)males.Ageofthesubjectrangefrom19-25yearswitha mean age of 20.22 years. The overall absence of palmarislongus was seen in 60 students (15%) which included 28males(12.96%)and32females(17.39%). Outof400students,Bilateralabsenceofpalmarislonguswasseen in 15 students (3.75%) whereas unilateral absence ofpalmaris longus was seen 22 males (5.5%) and 23 females(5.75%). Outof184malestudents28(15.22%)studentshadabsenceofpalmaris longus, 14 (7.60%) students had absence of palmarislongusinlefthandand8(4.34%)studentshadabsenceofpalmarislongu in Right hand. Bilateral absence of palmarislongus was seen in 6 (3.26%) males. Among 216

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female students 32 (14.81%) students had overall absence of palmarislongus where 13 (6.02%) students had absence of PL on left hand and 10 (4.63%) students had absence of PL on right hand. Bilateral absence of PL was seen in 4.17% females.

Conclusion: According to the findings of this investigation, palmarislongus was absent in 15% of the participants. The absence of palmarislongus was found in 12.96 percent of males and 17.39 percent of females. As a result, understanding this variance is critical for planning transplant procedures.

Keywords: Palmaris longusmuscle tendon, medical students.

Introduction

Palmaris longus is a long, thin muscle with a fusiform shape. It arises from the medial epicondyle of the humerus, as well as surrounding intermuscular septa and deep fascia. It converges on a long tendon that passes superficial to the flexor retinaculum to form a flat sheet that integrates into the palmar aponeurosis. It receives its vascular feed from a tiny branch of the anterior ulnar recurrent artery. The median nerve innervates it. It is a metacarpophalangeal joint flexor that is phylogenetically retrogressive. Its primary role is to hold the skin and fascia of the hand in place. [1] It is a weak wrist flexor that tenses the palmar aponeurosis. [2] It also safeguards the median nerve, which runs deep into the flexor retinaculum. [3,4]It is more functionally active in nonhuman primates.[5]Itisfullydevelopedatbirth.[6]

It is one of the most varied muscles and is classed as a retrogressive muscle phylogenetically. [7] The absence of the Palmaris longus was first documented in 1559. [8] It is frequently missing on one or both sides. [9] It is one of the human body's most changeable muscles. It varies according to ethnicity, gender, and side. Agenesis spans from 0% to 63 %, with an overall 16 % unilateral and 9 % bilateral distribution. A ten percent agenesis rate has been widely acknowledged. [10]

Palmaris longus is clinically significant. It is often utilised in reconstructive procedures, such as tendon transfers, second stage tendon reconstruction, pulley reconstruction, and tendon transplants by hand surgeons, lip and chin deformities by cosmetic surgeons, and ptosis correction by ophthalmologists. It is also utilised in various combinations to heal oncologic abnormalities of the head and neck, as well as arthritis of the thumb. [11]

Material and methods

This study was performed in 400 upper limbs of 200 medical and lab technician students of PRM medical college and hospital, baripada after obtaining written informed consent from all the the participant. for examination of the Palmaris longus muscle tendon five standard clinical methods were used . After explaining the study protocol they were subjected to schaeffer’s test, then bunched finger test, hooked finger test, pushpakumar’s test and thompson’s test with these clinical methods, presence or absence of the Palmaris longus muscle tendon were registered.

Schaffer’s test:in this test the subject are asked to oppose the thumb against the little finger and simultaneously flex the hand at the wrist joint. if present the PL appears as a prominent tendon medial to the tendon of flexor carpi radialis (FCR) in the middle of the lower part of

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the front of forearm , just above the wrist joint. if not clear seen , a slightly resistance force is applied to the middle three fingers.

Bunched finger test the participants are asked to place their hand flat on the table with the palm facing upwards. They are then asked to bunch their fingers (as if preparing them for smoothing the forehead) and exert firm pressure at the opposite finger tips the distal portion of the PL musculotendinous unit. Next, they are asked to flex the wrist which makes the tendon to stand out prominently. At this point of time, if they are asked to pronate the forearm to about 5° - 10 °, the tendon is seen even more prominently.

Hooked finger test - the participants are asked to stretch out their arm and then hook their fingers .The examiner then hooks the fingers of his hand and then locks his finger into the hooked fingers of the participant. The patients are then asked to flex their wrist while the examiner gives resistance . This makes the palmaristendan stand out prominently.

Pushpakumar's test - Pushpakumar "two - finger sign " method , the subjects were made to fully extend the index and middle finger while the wrist and other fingers were fully flexed with the thumb opposed and flexed.

Thompson's test - ln Thompson's test , a fist was made followed by flexing the wrist against resistance with the thumb flexed over the fingers.

In addition to the absence of the palmaris longus muscle tendon in male and female students the symmetry of both hands will also be considered the dominance of the hand will also be recorded. After the obtaining datas, it will be statistically analysed using various statistical method . AP value < 0.05 will be considered statistically significant.

Inclusion criteria

MBBS & DMLT students of PRM Medical college

Exclusion criteria

Students who are going to appear anatomy examination were excluded from this study.

Results

Outof400students,therewere216(54%)femalesand184(46%)males.Ageofthesubjectrangefrom19-25yearswitha mean age of 20.22 years. The overall absence of palmarislongus was seen in 60 students (15%) which included 28males(12.96%)and32females(17.39%).

Table 1 gender distribution of students

Gender	Number	%
Male	184	54
Female	216	46

Outof400students,Bilateralabsenceofpalmarislonguswasseen in 15 students (3.75%) whereas unilateral absence ofpalmaris longus was seen 22 males (5.5%) and 23 females(5.75%).

Outof184malestudents28(15.22%)studentshadabsenceofpalmaris longus, 14 (7.60%) students had absence of palmarislongusinlefthandand8(4.34%)studentshadabsenceofpalmaris longus

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in right hand. Bilateral absence of palmarislonguswasseenin6(3.26%)males.
Among 216 female students 32 (14.81%) students had overallabsence of palmaris longus where 13 (6.02%) students hadabsence of PL on left hand and 10 (4.63%) students had absenceofPLonrighthand.BilateralabsenceofPLwasseenin9(4.17%)females.

Table2.ShowingfrequencyofabsenceofPL byitslateralization

	Absent of PL RightSide	**AbsentofPL LeftSide**	**AbsentofPLBilaterally**	**Total**
Male	8(4.34%)	14(7.60%)	6(3.26%)	28
Female	10(4.63%)	13(6.02%)	9(4.17%)	32
Total	18(4.5%)	27(6.75)	15(3.75%)	60

Table3.Showingfrequencyofabsencebygenderdistribution

Gender	NoagenesisAgenesis	Gender	Unilateral Agenesis	BilateralAgenesis	Leftsideagenesis	Right sideagenesis
Male	156	28	22	6	14	8
Female	184	32	23	9	13	10
Total	340	60	45	15	27	18

Fig 1.left hand ,thompson's test

Fig 2.right hand, thompson's test

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Fig 3 Right hand,bunched finger test

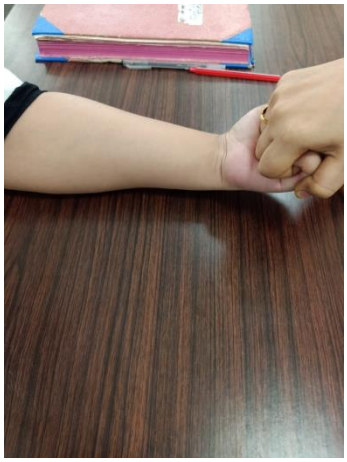

Fig 4.Left hand,hooked finger test

Fig-5 Right hand,schaeffer's test

Discussion

Palmaris longus is a thin fusiform muscle that arises from the medial epicondyle through a shared flexor tendon, as well as from the neighbouring intermuscular septa and antebrachial fascia. Its long, slender tendon attaches to the palmar aponeurosis and runs anteriorly to the flexor retinaculum, delivering a tendinous slip to the thenar muscles. The PL muscle is functionally redundant yet easily accessible.

Palmaris longus is one of the most varied muscles in the human body, and it is classed as a phylogenetically retrogressive muscle, meaning it has a small belly and a long tendon.[12]

The palmarislongus tendon is frequently regarded as the optimal donor for tendon transplants to replace the long flexors of the fingers as well as the flexor pollicislongus tendon. [13] The palmaris longus muscle is strongly developed in the animal species that can bear more weight on its upper limbs than other species. However, in humans, where the significance of the upper limbs in weight tolerance has been reduced, the palmaris longus muscle is less developed and incomplete. [14]

The absence of the palmaris longus muscle has been the topic of several investigations in both living and deceased persons, with the prevalence percentage varying among populations and races. According to many clinical anatomy textbooks, palmaris longus muscles are

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absent in around 15% of cases. [15] This figure, however, varies per location of the world. The total prevalence of palmaris longus missing in our study was found to be 15% of participants, which is consistent with the findings of Berhe T et al. [16] Bilateral agenesis was observed in 3.75 percent of the cases, which is similar with the findings of Jha R et al. [17]

The total lack of PL was observed to be more prevalent in females (17.39 percent) than in men (12.96 percent), which was consistent with the findings of Lamichhane PS et al.[18] Unilateral PL absence was about equally common in both sexes. Males were more likely to be absent on the left side (7.60 percent), whereas females were marginally more likely to be absent on the right side (4.63 percent). This conclusion might be explained by the fact that the dominant hand is more active in manual tasks and hence less prone to atrophy owing to disuse than the non-dominant hand.

Conclusion

According to the findings of this investigation, palmarislongus was absent in 15% of the participants. The absence of palmarislongus was found in 12.96 percent of males and 17.39 percent of females. As a result, understanding this variance is critical for planning transplant procedures.

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