

The Incidence of a Palmaris Longus Tendon in Patients with Dupuytren's Disease

B. W. E. M. POWELL, N. R. McLEAN and J. V. JEFFS

From Queen Mary's Hospital, Roehampton.

The incidence of a palmaris longus tendon in patients with Dupuytren's disease is significantly greater than in a control group with normal hands ($p=0.014$).

If a patient has a palmaris longus tendon, then there is a highly significant chance of Dupuytren's disease developing in that hand ($p<0.001$).

It is now over one hundred and fifty years since Dupuytren published some of his original work on the disease which now bears his name (Dupuytren, 1834) and although the exact aetiology of the condition remains in dispute associated conditions are said to include epilepsy, alcohol abuse, diabetes and trauma (Hueston, 1963).

There is still controversy as to whether the disease begins in the palmar fascia or in the adjacent tissues, but what is certain is that the palmar fascia eventually does become involved and thickened.

It was the senior author's clinical impression that those patients with severe Dupuytren's disease usually had a palmaris longus tendon present and it came as a surprise when we found that little had been written on its presence in Dupuytren's disease.

We therefore set out to document the presence of the palmaris tendon in 100 patients presenting to the hospital with conditions unrelated to the hand and in 100 patients with Dupuytren's disease either recently operated on, or seen in the Outpatients clinic.

Materials and Methods

One hundred and eighteen patients attending with conditions unrelated to the hand were examined and the presence or absence of a palmaris longus tendon was documented.

The one hundred and seven patients with Dupuytren's disease were either seen in the outpatient clinic or were operated on between September 1984 and May 1985. The palmaris tendon was demonstrated as described by Lister (1977) and a note made of other associated conditions.

Severe disease was defined as multiple recurrences despite adequate local fasciectomy, patients who had more than one operation performed on the same hand and those with fixed flexion deformities of the proximal interphalangeal joints which could not be adequately corrected by surgery.

The results were analysed for statistical significance by use of the X^2 test.

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N. R. McLean. B.S.c., F.R.C.S. Queen Mary's Hospital, Roehampton Lane, London SW15 5PN.

Results

In the initial study 118 patients with conditions unrelated to the hand were examined. There were 54 males and 64 females and 96% were right hand dominant. None of the patients had Dupuytren's disease.

Table 1 shows the presence of the palmaris tendon in this group. Of those patients with the tendon present unilaterally ten had it in the right hand and six in the left hand.

A total of 107 patients with Dupuytren's disease were examined, forty-five (42%) of whom had undergone surgery between September 1984 and May 1985. All were Caucasian with a mean age of sixty-two years and 95% were right hand dominant. One patient had Peyronie's disease, eleven had knuckle pads and four had plantar disease (one of whom had plantar disease without palmar involvement). The numbers with other associated conditions is shown in Table 2. Thirty-nine patients (37%) gave a good history of trauma to the involved hand before the appearance of the disease, of these, nine had sustained open lacerations, fifteen had received a closed crushing injury and a further fifteen had fractured either the wrist (ten patients) or metacarpals and phalanges.

TABLE 1
Number of control patients with a palmaris longus tendon

Palmaris Tendon	Number	%
Present bilaterally	72	61.0
Present unilaterally	16	13.5
Absent bilaterally	30	25.5

TABLE 2
Number of Dupuytren's patients with other associated conditions

Condition	Number	%
Trauma	39	36.5
Alcohol Abuse	21	19.6
Family History	20	18.7
Manual Occupation	16	14.9
Epilepsy	6	5.6
Diabetes mellitus	4	3.7
Tuberculosis	0	0

Sixty-seven patients (63%) had undergone a total of 164 operations prior to September 1984 giving a mean of 2.45 operations per patient. Of these thirty-eight (35%) when examined had recurrent disease.

Table 3a shows the number of patients with palmaris longus tendon. Of the twelve patients with the tendon present unilaterally seven cases had it in the left hand and in five on the right.

The incidence of a palmaris longus tendon in the group of patients with Dupuytren's disease was significantly greater than in the control group with normal hands ($p = 0.014$).

In the Dupuytren's group two hundred and fourteen hands were examined and of these 177 (87%) were involved with Dupuytren's disease (Table 3b). If a patient has a palmaris longus tendon present then there is a highly significant chance of Dupuytren's disease developing in that hand ($p < 0.001$).

Forty-eight patients were thought to have severe disease (Table 4) affecting a total of seventy-two hands. There were sixty-two hands (86%) affected by severe disease in which there was a palmaris longus tendon present and ten hands (14%) where the tendon was absent.

The incidence of a palmaris longus tendon in the group with severe Dupuytren's was significantly greater than in control group ($p = 0.017$), but there was no significant difference when compared to those with non-severe Dupuytren's disease ($p = 0.40$).

TABLE 3a
Number of Dupuytren's patients with a palmaris longus tendon

<i>Palmaris Tendon</i>	<i>Number</i>	<i>%</i>
Present bilaterally	83	77.6
Present unilaterally	12	11.2
Absent bilaterally	12	11.2

Control v Dupuytren's $X^2 = 8.54$, $p = 0.014$

TABLE 3b
Number of hands involved with Dupuytren's disease

<i>Condition</i>	<i>Hands</i>	<i>%</i>
Dupuytren's disease with palmaris tendon present	157	73
Dupuytren's disease with palmaris tendon absent	29	14
No Dupuytren's disease with palmaris tendon present	21	10
No Dupuytren's disease with palmaris tendon absent	7	3

Control hands v Dupuytren's hands $X^2 = 13.82$, $p < 0.001$

TABLE 4
Presence of palmaris tendon in patients with severe disease

<i>Palmaris tendon</i>	<i>Number</i>	<i>%</i>
Present bilaterally	40	83.3
Present unilaterally	4	8.3
Absent bilaterally	4	8.3

Control v Severe Dupuytren's $X^2 = 8.15$, $p = 0.017$
Non-severe Dupuytren's v Severe Dupuytren's $X^2 = 1.66$, $p > 0.40$

Discussion

The palmaris longus consists of a fleshy belly arising from the medial epicondyle of the humerus and a long flat tendon, the distal end of which is replaced by the palmar aponeurosis. Although the aponeurosis is the vestigial remnant of the palmaris longus tendon in the hand, little has been written on the incidence of the palmaris longus tendon in patients with Dupuytren's disease.

Romanes (1964) states that the palmaris longus is absent in 11% of limbs and Lister (1977) says that it is present bilaterally in 70% of subjects, unilaterally in 14% and bilaterally absent in a further 16%. Machado (1967) in a study of 379 Amazon Indians found it absent bilaterally in 2.6% and unilaterally in a further 1% of individuals and in their paper give a review table comparing their data with those reported in the literature. They stress that for accurate comparisons to be made the percentage of individuals rather than the percentage of limbs with the muscle absent should be recorded. In the table there is a large variation in the uni- or bi-lateral absence of the muscle varying from 0% in a series of 200 Tibbu to 36.8% in a group of 126 Jews and up to 38.2% in a group of 1433 Egyptians. In the two English studies quoted the muscle was absent in 13.8% and 17.7% of individuals examined. In the elegant anatomical study of 1600 arms (Reimann, 1944) they found 12.8% overall incidence of palmaris agenesis. In a study of 362 bodies they found bilateral absence in 8.3% and unilateral absence in a further 8.3%. Interestingly they also found 9% incidence of other anomalies, such as a distally based belly, a bifid tendon or complete duplication. Thompson (1921) found agenesis of the muscle on the left in 23% (800 arms) and on the right in 16.3% (2401 arms). Although there is great variation in the incidence of palmaris longus absence an overall figure of 13% would seem to be around the average quoted in the literature. Our figures are slightly different from those quoted (Table 1) in that we found the tendon totally absent in one quarter of those examined who did not have Dupuytren's disease.

Our figures are certainly accurate as each hand was checked by two of the authors. We can only assume that the groups referred to by such authors as Romanes and Lister included patients with Dupuytren's disease (unlike

our own control) and this gave us slightly higher incidence for the absence of the palmaris tendon.

In 37% of our cases there was a good history of trauma (Table 2) and 10 patients (9.4%) had sustained a fracture of the wrist prior to developing Dupuytren's disease in the hand. In a recent paper (Stewart, Innes and Burke, 1985) there was an 11% incidence of Dupuytren's disease in a group of 235 patients at six months after sustaining a Colles fracture. They concluded that trauma may exacerbate a pre-existing tendency to develop Dupuytren's disease and our figures would seem to be in agreement with this.

Seventy-eight of the Dupuytren's group had the tendon present bilaterally, 11% had the tendon present unilaterally and in a further 11% the tendon was totally absent (Table 3a). These figures are significantly greater than in the control group ($p = 0.014$).

Forty-eight patients had severe disease and 83% had the tendon present bilaterally (Table 4). Again there was a significant difference when compared to the control group ($p = 0.017$) but the incidence was not significant when compared to the non-severe cases ($p = 0.40$).

Finally, when all the hands were analysed together there was a highly significant chance of Dupuytren's disease developing in a hand in which there was palmaris longus tendon present ($p < 0.001$).

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