The relation of gout and rheumatism to Dupuytren's contraction of palmar fascia, with results of treatment by Adams' operation : being a thesis for the M.B. degree at Cambridge University / by Charles Edward Hedges.

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THE RELATION OF GOUT AND RHEUMATISM TO DUPUYTREN'S CONTRACTION OF PALMAR FASCIA,

WITH RESULTS OF TREATMENT BY ADAMS' OPERATION;

BEING A THESIS FOR THE M.B. DEGREE AT CAMBRIDGE UNIVERSITY.

BY

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The deformity known as Dupuytren's contraction of the palmar fascia, noted by Sir Astley Cooper in 1820, and called by Boyer in 1821 "Chrispatura tendinum," was first accurately described and its pathological appearances pointed out by Dupuytren in 1831. In his lectures, 1831–32, he says: "It has been made necessarily to depend on a rheumatismal, a gouty affection of tendons, external violence, fracture, on a 'morbific cause induced by metastasis,' such as follows inflammation of the sheaths of tendons, or on a species of ankylosis." It was Dupuytren who, by careful dissection, first proved the deformity to depend on a thickening and contraction of the palmar fascia. As to the cause, he believed it was wholly provoked by repeated injuries of the palmar fascia by pressure and friction from implements habitually used in different mechanical callings (Gazette Medicale de Paris, 1835, vol. iii. p. 481). The deformity does not appear to have interested English surgeons until Adams, in 1873, published his "Observations on Contraction of Fingers, commonly called Dupuytren's Contraction," in which he ascribed it partially to a local and

partially to a general constitutional cause. This constitutional condition was, he believed, gout or rheumatism, not so much the acute form of either as that which is called rheumatoid arthritis. A second edition appeared in 1892, expressing the same opinion as previously.

He bases his views of its constitutional origin upon (1) few cases of Dupuytren's contraction amongst the labouring classes, and amongst any particular class of mechanics; (2) in hospitals the majority of patients are butlers or indoor servants, who lead a sedentary life, and thus favour gout; (3) affection is of common occurrence in upper and middle classes of society, in most of which there is a gouty disposition; (4) frequent occurrence in left hand and both hands; (5) its hereditary character.

He says that up to the publication of his book in 1873, he had never seen a case in a woman. In the majority of his cases, which were derived mainly from patients in good circumstances, there were other manifestations of gout, and he was able to trace a well-marked family history of gout, although the patients may not have been afflicted with that disease. He quotes a case of Dupuytren's contraction in both hands associated with contraction of plantar fascia of both feet.

In two instances in which he operated, each patient had an acute attack of gout in the hands soon after the operation, although one of the patients had not previously shown any manifestation of it. The other had suffered from iritis, which he had been told by a physician was of a gouty nature.

About the same time, Cæsar Hawkins had a patient who also suffered from an acute attack of gout previous to the operation for division of the palmar fascia.

Adams says he has seen most cases amongst clergymen, barristers, medical men, and officers, the only condition common to a great majority of which was a disposition to gout co-existing with the finger contraction.

In 1875 Sir James Paget, in a lecture on the minor signs of gout in hands and feet, says: "A number of old people were seen with their fingers drawn down into their palms, especially the little and ring fingers, sometimes in one and sometimes in both hands. This condition is often characteristic of gout, but it must be clearly understood that in a certain number it was due entirely to occupation, and when the cases which were due to injury or occupation had been separated, that the rest were almost always significant of a gouty constitution." He points out the occurrence of abnormal development of fibrous tissue in other parts, as in the sheath of corpus cavernosum of penis, and in plantar fascia associated with Dupuytren's contraction.

In 1876 Madelung of Bonn states the cause to be absorption of the fat of the palm of the hand, which occurs in old people, thus more easily exposing the palmar fascia to pressure and injury. This leads to a chronic inflammatory process, thickening and subsequent contraction of the inflammatory tissue. This theory will not, however, explain those cases which occur before the age of 40, nor will it explain the cases in which the deformity occurs in both hands, and in those who do no manual labour. Nor will it explain those cases, which are not at all uncommon, in which the contraction commences several years after active life has ceased.

In 1877 Post of New York puts down the cause of Dupuytren's contraction to constant irritation of the integument setting up a chronic inflammation, which spreads to the fascia beneath.

In 1880 Fothergill had frequently noticed these contractions of palmar fascia in gouty subjects; and Gilbart Smith quotes, as an indication of its hereditary character, a family, three brothers of which, all the subject of gout, suffered from Dupuytren's contraction.

In 1881 Dr. Myrtle admits its heredity, but does not admit of gout or rheumatism as a cause, for the following reasons:— (1.) It is never met with amongst women, whereas gout is partial to the fair sex; (2.) many, and worst cases, cannot boast of a gouty progenitor, and never exhibited a symptom of gout or rheumatism; (3.) remedies for gout no good for this affliction. Against these three objections of Dr. Myrtle's must be urged:— (1.) That he is totally wrong in stating that it never occurs in women; it is rare in women, and so is gout rare in the fair sex; (2.) statistics show that most of the cases have either a gouty or rheumatic history; (3.) what remedies are there which are known to have any influence over the chronic thickening of the capsule and fibrous structures around joints affected with gout and rheumatoid arthritis?

In the same year Reeves published a paper in the Lancet contradicting Dr. Myrtle's statement about its occurrence in women, but at the same time stating that he did not believe in gout or rheumatism as a sole condition predisposing to the disease. He states, as result of his experience, several causes. (1.) Rheumatism and gout, (2.) injury and occupation, (3.) heredity, (4.) neurosis. He had three cases on whom he operated which were followed by an acute attack of gout.

In 1884, Abbé of New York read two papers before the New York Academy of Medicine, advancing a theory of neurotic origin of the disease; he entirely rejected the gouty

origin of it, and sought to establish the theory that it was of a reflex nervous origin, consequent on a traumatism. The sequence of events, he suggests, is as follows:—(1.) Slight traumatism of palm; (2.) spinal impression provoked by the peripheral impression; (3.) reflex influence to part originally injured, producing hyperæmia and new growth; (4.) through the tense contraction, a second series of reflex symptoms, such as neuralgias, &c., and a reflection of the trouble to the opposite side. He brings forward many cases in support of this theory, but such cases, if common in America, are rarely if ever met with in England. Both Adams and Keen state they have never seen the various painful neuralgias and neurotic affections he so graphically describes, and not in a single case I have examined did one complain of any "pain shooting up the arm and down the opposite side," and the various other neuroses which he enumerated. Besides this, the patients will often tell you that the dimpling of the skin commenced almost simultaneously in both hands. Neither Keen nor Adams will allow of this nervous origin of Dupuytren's contraction, except in so far as gout and rheumatism are possibly nervous in their remoter origin. Besides, if we are to regard the causation of the deformity as due to this reflex nervous influence, we should expect to see the disease of much greater frequency amongst the labouring classes, whereas we find most cases of Dupuytren's contraction in those who do no hard manual labour.

By making this statement I am taking it for granted that Adams is correct in stating that the deformity is more common amongst patients who are well-to-do, and consequently have no need to do hard manual labour.

In about 2000 cases of infirmary patients over forty years of age, I found only 24 cases, which is about 1.2 per cent., and at least four-fifths of the cases occur after that age.

Sir Dyce Duckworth and Garrod also state that the disease is much more common amongst those who lead a sedentary life.

Abbé brings forward 10 cases to support his theory; in the first two the contraction started in the left hand, whereas the patients used their right hands in their trade of cloth-cutting; in his eight other cases there was distinct rheumatic history in three cases, and in two others finger contractions existed in members of the same family.

In 1884, Noble Smith read a paper before the Clinical Society, in which he denied gout and rheumatism as a cause, but allowed that there was some constitutional cause at work in addition to some local cause. He regarded the primary cause as some

chronic irritation reflexly causing contraction of the palmaris longus tendon, and subsequently affecting the palmar fascia, for he says that in almost all the cases which he examined he found the tendon stand out prominently from the others at the bend of the wrist; although I carefully looked out for this prominence, I failed to find it so, even in one case.

He also states farther on, that out of 700 patients he examined in some infirmary, he found 70 cases of Dupuytren's contraction. It seems almost impossible to believe this, as out of 2000 patients whom I examined in four different infirmaries, I was only able to find 24 cases, and this including those with only the primary dimpling of the skin. Is it possible that he included several cases of spastic contraction of the tendons in cases of paralysis, of which there were several instances? I also think his percentage of females attacked is far too high, 1 to 4 males, as Keen only gives it as 1 in 15 males out of 187 cases. My own statistics will give it at about 1 to 8 out of 64 cases.

Professor Humphry, speaking on the discussion of this paper of Noble Smith's, suggested that in causation the truth probably lay between the two opinions of a local and constitutional cause. He pointed out that pressure on palm of hand fell more strongly on ring-finger, and hence the reason why this was most often primarily affected; he also pointed out the limited extension of this digit alone.

In 1885, Lockwood read a paper before the Pathological Society "On Contraction of the Digital and Palmar Fascia." He brought forward three cases. (1.) A girl, aged 21, who had had her finger contracted as long as she could remember. Having had occasion to amputate the finger, he found the fascia to be thickened and shortened, but otherwise normal. He says the case was probably one of heredity. (2.) Male, aged 21. No occupation. Six other members of same family similarly affected. Lockwood says he has recently seen other cases which strongly support the view of heredity. (3.) A male, aged 45. On dissection of the hand affected with Dupuytren's contraction, urate of soda was found in the thickened bands of fascia. Although there was no clinical history of the case, it can scarcely be doubted that the thickening and contraction was due to inflammation set up by the urate of soda. At the end of his paper he says: "Without doubt an enumeration of the causes of contraction of the digital and palmar fascia, putting aside the cases of congenital shortening, would be merely a recital of the various affections which are capable of causing chronic inflammation."

In 1882, Keen of New York read two papers on Dupuytren's contraction, which were published in the Philadelphia Medical Times of 1882. He collected 253 cases, including the 70 of Noble Smith already referred to.

Sex affected—1 female to 15 males.

Occupation of 123 cases in which it was noted—74 non-manual; 49 manual.

Hands affected of 184 cases. Both 103 times; right 58 times; left 23 times. Right hand thus involved 161 times; left hand, 126 times.

Out of 214 cases in which it was noted which finger was affected, in only 11 was the thumb affected, and in 24 the forefinger. The ring and little finger bore the brunt of the affection.

Heredity.—Out of 198 cases there were 50 of heredity. Of 95 cases, in 64 distinct personal or hereditary history of gout; in 31 it was excluded.

Dr. Keen maintains the view of a constitutional origin, and this he states to be, as a rule, gout or rheumatism. He says the patients are rarely free from the "minor manifestations of gout," as Sir James Paget calls them. He has seen it follow on acute rheumatism, although Adams excludes this as a cause of the affection.

In 1885 Stevenson quotes a case in which there is a family history of Dupuytren's contraction for three generations with no history of gout.

In 1891, in a series of lectures at the Royal College of Surgeons, William Anderson divides cases of Dupuytren's contraction into two classes. (1.) True Dupuytren's contraction, with no traumatic history, and a tendency to multiplicity of lesion. (2.) Those cases which are the result of a wound and confined to the part in direct relation to the injury.

In his statistics we find the following facts:—

Hand affected.—Bilateral in 24 cases out of 39. Right hand affected in 10 cases out of 39. Left hand affected in 5 cases out of 39.

Of eight patients, six of whom were women, the band was purely palmar, with no contraction of the fingers. In only one case was it associated with disease of the plantar fascia. He points out that the seat of the initial lesion is situated at a spot where the finger-nails come in contact with the palm of the hand.

Out of 2600 adults, 33—*i.e.* 1.27 per cent.—were found suffering from various stages of this affection. Out of 800 children under 15, none were affected.

Sex.—Cases of any degree of severity are rare in women. Of 39 cases, 25 were in men and 14 in women, but in only 8 of these was there any contraction of the fingers.

Age of onset.—Most cases of non-traumatic form begin after fifty years of age.

He does not believe in the influence of occupation as a cause of the disease; he states that it is very rarely found amongst soldiers and sailors. Shoemakers are said to suffer more than others, but this is not borne out by statistics. The disease is more frequently seen in those not employed in manual labour; perhaps the thickening of the skin may in some way prevent the underlying fascia from irritation.

Constitutional condition of his 39 patients:—1 gout; 1 acute rheumatism; 3 rheumatoid arthritis; 6 chronic rheumatism; gouty inheritance in 3 other cases.

Anderson says his own conclusions are based upon patients in hospitals, and hence the remarkable absence of gout or neurotic disposition.

Race and climate.—Very rare in Eastern countries, *cf.* Japan and India and Central Asia.

Inheritance.—Unquestionably a strong predisposition to heredity in the disease.

Cause.—Disease is of no more than average frequency in certain employments in which men are peculiarly and constantly liable to palmar friction. Some source of irritation must be present, and it has been suggested that this may be a gouty deposit (Lockwood). This experience is exceptional, as the majority of patients in this country are not, and have not been, subject to gout or rheumatism.

Anderson says the changes are more suggestive of chronic rheumatism than gout; but even the probability of this origin is not supported by observed facts. He believes strongly in the agency of a specific micro-organism which gains access to the palm of the hand by slight traumatism of the epidermis with the finger-nails.

I don't think any one attached any importance whatever to Anderson's remarks about the causation of the disease being due to a specific micro-organism; the only evidence he brought forward was the growth of a yellow nodule on agar, liquefying the medium in which it was placed and the tube being odourless; sections of it stained with fuchsin and Gram's method showed no organism under $\frac{1}{12}$ immersion. He finishes by saying that he hoped to publish this and other experiments *in extenso* within a short time, but since that time no further statements upon the subject have appeared substantiating his theory.

In Hutchinson's Archives appear some valuable cases in support of the hereditary and gouty origin of the disease. In 1891, vol. ii. p. 52, he points out several cases in support of its hereditary character and its association with fibrous induration and contraction of other parts of the body, such as the penis and plantar fascia. He quotes a case of Gaubius:—A man had contraction of his little finger, caused by a tense band of fascia going to that digit. The eldest of his two sons, on attaining to the same age as that at which the contraction commenced in his father's case, became similarly afflicted. The younger brother became similarly affected at the same age in spite of preventative measures. Hutchinson says we have here a good example of what is not unfrequently seen in cases of finger contractions; the condition of health, or perhaps of tissue, giving tendency to it, is unquestionably sometimes hereditary, although I think but to a slight degree. It is possible that it is connected with an arthritic diathesis.

On page 79 of same volume he quotes a case of Dupuytren's contraction of the little finger in both hands associated with hard fibroid induration and thickening of the plantar fascia. The patient had suffered from chronic rheumatism and his left shoulder was considerably stiffened. Hutchinson says he did not admit a history of gout, but looked a likely subject for it.

In Archives for 1894, p. 176. A male, in which the disease was strictly limited to little finger of both hands, for he could straighten ring-finger completely. The contraction was caused by a strong band of fascia from ulnar border of finger, which passed from its base to its tip. There was a family history of gout, and patient himself had often suffered from that disease. No history of heredity or local cause.

In Archives for 1894, p. 333. Three cases of curved penis in association with Dupuytren's contraction, two of which cases are of rheumatic and one of gouty stock. There was no induration or contraction detected in any way, but on erection the penis became bent with its concavity upwards.

Van Buren in 1888, in his Diseases of the Genito-urinary Organs, describes a circumscribed induration of the erectile tissue of the penis, sometimes occurring in erectile tissue, at other times in fibrous envelope of the corpora cavernosa: it occurs after middle life. Although many patients are noted to have gout or rheumatism, he says that the patients are not uniformly subject to any diathetic disease. He also points out the association of this condition of the penis with the condition known as Dupuytren's contraction.

Kirby in 1849 put down all such cases as of gouty origin.

Amongst my 60 cases will be found two cases of fibroid induration of portions of penis. In one patient, aged 57, a printer, who had suffered from Dupuytren's contraction for some time, and both hands were affected, there was a well-marked history of gout. Along the dorsum of the penis there extended a hard fibroid mass from just behind glans to near its root. On erection of the penis its point was directed against the abdominal wall.

In the second case, that of a bootmaker aged 59, both hands were affected with Dupuytren's contraction. There was a well-marked family history and personal history of gout. Tophi in ears, there were marked fibroid induration of the sheath of corpus spongiosum, causing penis to be bent upwards on erection.

I have also quoted the observations of Sir James Paget in the earlier part of this paper with regard to the occurrence of this phenomenon. The association of the two conditions, and the marked occurrence of one of them in association with gout, makes it very probable that this disease plays not an unimportant part in being a factor in the causation of the other.

Dr. Archibald Garrod, writing in St. Bartholomew's Hospital Reports for 1893, reports three cases characterised by the presence of nodules or cushions of fibrous tissue upon the finger-joints; in one of them it was associated with Dupuytren's contraction of palmar fascia.

Case I.—Male, aged 20, clerk, suffered from dyspepsia. He came of a markedly gouty stock, his paternal grandfather being a martyr to the disease, and his father had Dupuytren's contraction of the fingers. His mother was said to be somewhat rheumatic. Nodules about half the size of a hazel-nut projected from the dorsal aspect of several of the joints of the fingers of both hands; skin over them was freely movable. The lumps were first noticed at the age of 13, and they have steadily increased in size. The most remarkable point about the case is that an elder and younger brother of the patient are said to suffer from similar deformities.

Case II.—A woman, aged 50, with no personal or family history of gout, but with typical Heberden's nodes upon the terminal joint of her right index finger. There were no signs of rheumatoid arthritis in any other joint. The nodules were similar in character to those in the first case. Some of them had existed at least thirty years. No complaint of pain made. She ascribes their appearance to resting upon the affected joints whilst scrubbing floors.

Case III.—Male, aged 43. No personal or family history of

gout. No other member of his family was similarly affected. First nodule appeared at age of 13; he attributes its development to scraping his hands against the wall when playing games at school. It is interesting to note that upon the palm of the left hand, beneath the ring and little fingers, there was an induration and some puckering of the skin, indicating the commencement of Dupuytren's contraction. As in the first case, the occupation of the patient involved much writing.

The remarkable family history of the first patient, and the occurrence of the nodules in several members of his family, suggests a constitutional origin for them, and lends some colour to the idea that they may be connected with a gouty tendency; but, on the other hand, no one of the three patients had suffered from acute gout. It is further interesting to note the coincidence in one case of an early stage of Dupuytren's contraction of the fingers, and the history of the same affection in the father of the first patient. The influence of injury in determining their formation was in some instances well marked.

I consider the pathology and causation of these growths as analogous to the growth and contraction of the palmar fascia in Dupuytren's disease, and as a further proof of the tendency to the formation of fibrous tissue in abnormal abundance in situations exposed to slight irritation in persons of a certain constitutional state. Whether this state is always a tendency to gout or rheumatism I am unable to state; but that such is very often the case I feel almost confident.

Summary of Statistics of Sixty-four Cases collected by myself at four Infirmaries and one Hospital.

Age stated in 63 cases—

60 years and over, 22 cases.
Between 50 and 60, 17 „
„ 40 and 50, 11 „
„ 30 and 40, 11 „
Under 30 . . 2 „

Thus 50 cases began after 40 years of age, and 61 cases began after 30 years of age.

Sex stated in 64 cases—

57 males—7 females.

In all the female cases I saw the condition was slightly marked, and only bilateral in one case; in one instance it was probably congenital.

Hand affected in 62 cases—

Both hands affected in 24 cases.
Right hand „ 20 „
Left „ „ 18 „

This makes the right hand affected 44 times, and the left hand 42 times. Thus the right hand is only affected in two more cases than the left in 62 cases.

In nearly all the cases of which I could get any history of its origin, it commenced in either the ring or little finger. Hutchinson quotes one case where it commenced in the middle finger of left hand, and affected that finger alone.

Family or Personal History, 60 cases—

In 39 cases history of gout or rheumatism.
In 3 „ „ heredity.
In 7 „ „ traumatism.
In 12 „ no history of gout, and in 5 of these cases I could not ascertain any family history.

Of the 12 cases in which there was no history of gout or rheumatism, four had suffered from undoubted syphilis, three were suffering from phthisis, one had cancer of œsophagus.

Thus of 53 cases of true Dupuytren's contraction there is a distinct history of gout, rheumatism, or heredity in 42 cases.

No particular class of occupation is affected more than another, except perhaps in the case of painters and printers, of which there are six instances. This may be significant, as in both instances their occupation puts them much in contact with lead, which, as one knows, is very apt to bring out gout where one is predisposed to it. Of bootmakers, who are popularly supposed to be frequently affected, there is only one solitary example, he being one of the cases with fibroid induration along the dorsum of penis.

Frequency of Occurrence.—Of 2000 patients examined at Kensington, Greenwich, and Marylebone Infirmaries, most of which were over 40 years of age, I only discovered 24 cases, *i.e.*, about 1.2 per cent.

Now, with regard to the various theories which have been set forth to explain the deformity—

1st, That of Dupuytren himself, who stated it to be solely of traumatic origin, I don't think it possible to hold this view, for the following reasons:—(*a.*) Its frequent occurrence in both hands. (*b.*) Left hand almost as often affected as the right. (*c.*) Its more frequent occurrence in the wealthier classes, who have to do no manual labour. (*d.*) Its frequent development after the period of active life has finished. (*e.*)

If it were solely of traumatic origin, we should expect it to affect one class of mechanics more than another.

As regards the theory of Abbé, I have partially discussed this in the early part of this paper, and can only add now that only in one sense can I admit of its being nervous in origin, and that is in the same sense in which Charcot's disease and rheumatoid arthritis are said to be due to lesions of the trophic nerves going to the part affected, and are thus said to be nervous in their origin; or in the same sense as the formation of urate of soda in the body is said to be controlled by the central nervous system.

I have already discussed Anderson's theory of a micro-organism being the cause, and also the theory of reflex contraction of the palmaris longus of Noble Smith.

Now to what do the statistics and various authorities which I have quoted lead one to believe to be the cause of this affection? Firstly, that the cases must be divided into two classes:—(1.) True Dupuytren's contraction, in which there is no history of traumatism. (2.) False Dupuytren's contraction, in which there is a distinct traumatic history. In this class of cases it is as common to see the disease in childhood as in old age. The seat of the initial lesion is single, and the affection is confined to the injured hand, and even finger. The contraction in these cases progresses very rapidly to a certain point, and then ceases to get worse.

Of course there is always the difficulty in saying how much of the deformity is due to the traumatism, and how much to the predisposing cause. It is just the same in gout and rheumatism as in tuberculosis; a slight injury to the knee may be just the exciting cause required to set up acute tubercular arthritis in that joint, just as a slight injury may set up acute gout or a gouty inflammation in one predisposed to the disease.

Now with regard to the causation of true Dupuytren's contraction, I believe it to be a constitutional disease for the various reasons:—(1.) Results of statistics. (2.) Marked heredity. (3.) Age of its onset. (4.) Occurrence in women, and yet its rarity in the sex, who are, as a rule, exempt from hard labour and gout. (5.) Occurrence more often in men exempt from manual labour. (6.) Its involving of left hand so frequently, and often before, or even without right. (7.) Involvement of both hands, more often than one alone, point to a general cause. (8.) Occasional appearance as a congenital disease. (9.) Analogy to contraction of plantar fascia and other fibrous structures. I also believe that there is more than one constitutional diathesis which predisposes to the deformity, to enumerate which would be to enumerate all the causes of chronic

inflammation. But that gout and rheumatism play a prominent part in its causation I do not think any one can deny from the statistics and other evidence I have brought forward.

I regard the thickening of the palmar fascia as in every sense analogous to the thickening of the fibrous tissue and capsule around joints affected with osteo-arthritis and gout. It is remarkable to note the many cases of rheumatoid arthritis one meets with in connection with Dupuytren's contraction.

No one can but admit that there is a great tendency to heredity in this deformity after the various cases I have quoted earlier in this paper. One must also take into account the five or six cases of Dupuytren's contraction I have shown associated with fibroid thickening of other parts of the body, which are almost always associated with a gouty tendency, and in many cases with a personal history of acute attacks of gout. Paget even goes so far as to say Dupuytren's contraction of the palmar fascia is one of the many manifestations of gout.

The age of onset is also an important point, as, like gout, it comes on, as a rule, after 40, and often after the period of active life has ceased. The disease rarely attacks women, *i.e.*, it is rare in the sex who are, as a rule, exempt from hard labour and gout.

Adams excludes acute rheumatism from amongst its causation, but Keen has frequently seen it follow that disease; and I have the notes of its occurrence in three or four cases apart from gout.

It is also worthy of note that in four cases in which there was no history of gout there was a distinct history of syphilis; and also in some of the cases with a history of gout or rheumatism there was a specific history as well. In such cases would it not be possible that tertiary syphilis played a prominent part in the causation of the deformity? for it is a well-known fact that the manifestations of tertiary syphilis tend to be in the formation of fibrous tissue. Of course, I have had no personal experience of the occurrence of Dupuytren's contraction in the wealthier classes; but from information I have derived from various sources, there is in most cases a personal or hereditary history of gout.

Various opinions are held as to the result of operation in cases of Dupuytren's contraction, some surgeons alleging that the operation is in no way beneficial, and that the deformity returns in an aggravated form in a short time, others that the operation is a complete success. I thought it would be interesting to find out the result of cases which had been operated on for from two to five years ago.

I collected eighteen cases which had been operated on at the Hospital, and visited the addresses at which the patients lived

at the time of the operation. Unfortunately, I could only find eight out of the eighteen cases. I have reported fully upon the result of the operation, its success or failure. The operation performed in every case was the subcutaneous method of Adams.

The facts to be gathered from these cases are—(1.) That in all the cases the patient's condition was improved, and in two or three cases to a marked degree. (2.) The great tendency to recontraction of the finger. (3.) There is some danger of getting the fingers stiff, with no power of flexion.

One would imagine that, were the patients to take greater care, and wear a splint for some time at night after leaving it off in the daytime, better results would be obtained. The operation is much more successful amongst the upper classes, who are able to take greater pains and spare more time in having their deformity attended to, and are not obliged, directly the splints are removed, to go to hard work and use their hands in a similar way as before the operation.

I have no experience of the results of the operation as performed by Reeves at the Orthopædic Hospital; but from all accounts, and from published statistics, Adams' subcutaneous operation appears to be the more successful of the two.[1]

In conclusion, I must thank Mr. Keats of the Greenwich Infirmary, Mr. Lunn of the Kensington Infirmary, Mr. Gibbes of the Marylebone Infirmary, and Mr. Sansom of the Lambeth Infirmary for their kindness in allowing me to examine the patients at the various institutions.

Reports of Nine Cases operated on at St. Bartholomew's Hospital.

1. John M., aged 59, bootmaker, admitted October 20, 1893, complaining of contraction of fingers, which prevents him from earning his livelihood.

Condition before operation.—All fingers of both hands are

[1] There are two points brought out by the results of operation which may be useful. (1.) The earlier the operation is done, the better the result that will be obtained, as when there is a great degree of contraction there is such a degree of force required to get the fingers extended, and subsequently always great loss of power in the flexion of the digits operated on. This appears to be sometimes due to injury to the joints and subsequent fibrous ankylosis, and sometimes due to loss of power in the flexor tendons themselves, as the fingers can easily be flexed by passive movements. Besides, there must ensue some changes in the ligaments and soft structures about the joint; these will become shortened or extended as may be required to adapt themselves to the altered condition of the part, and consequently these will have to be divided before the finger can be straightened. (2.) I think gradual extension of the digits is much more efficacious than forcible and rapid extension in these bad cases, and there is much less danger of splitting up the skin and leaving an ugly wound to granulate up, which not only prevents your applying gradual extension at the time, but also, by the cicatrisation of the scar tissue, leaves the patient in a worse condition than before the operation.

more or less flexed, especially right ring-finger and left little finger; the tips of these two almost touch the palm of hand. Operation on October 28, 1893, by Mr. C. B. Lockwood. Multiple punctures were made between skin and fascia, where they were not very adherent to one another, and the tense bands divided in many places both in the palm and fingers. All the fingers could be then straightened with the exception of right ring-finger, which could not be straightened on account of articular changes. Malleable iron back splints put on in a semi-flexed position, and straightened out day by day. On December 1, 1893, patient left the Hospital; could use all fingers well except right ring-finger, which is over-extended and stiff at the terminal joint.

On May 15, 1895, about one and a half years after the operation, I went to see the patient, and found the following condition:—Patient able to follow his employment perfectly well; no pain or discomfort. He will tell you the operation did him a "lot of good." The right ring-finger is bent at an angle of 90° at the first inter-phalangeal joint, and a dense cord of fibrous tissue can be felt running up to it. Left little finger almost straight; other fingers straight; a tense band of tissue can be felt running from the base of right index finger to the base of index finger.

He wore the back splint for six weeks after the operation.

He says the ring-finger of right hand is gradually getting more flexed.

Condition of penis same as when in the Hospital.

2. J. C., male, 35, iron-fitter, admitted on March 28, 1893, complaining of "bent fingers" of both hands.

Condition previous to operation by Mr. Langton.—Both little fingers flexed at metacarpo-phalangeal and first phalangeal joints, and tips almost touch the palms. Ring-fingers are semi-flexed at same joints, the middle fingers slightly affected. This condition of his fingers prevented him from following his employment.

Operation on April 4, 1893.—The palmar fascia of both hands was divided in numerous situations in both hands with an Adams fascia knife, the knife being passed between the skin and fascia, and then by cutting downwards the bands were divided; both hands were bandaged firmly to a straight back splint.

On April 4 patient was discharged, still wearing his splints. Condition much improved. Little finger of left hand only one not quite straight.

On March 28, 1893, patient writes to me, as a result of inquiries, as he lives far away in the country.

He wore splints two months after operation. Fingers of both hands are better and straighter. He is well able to follow his employment. The fingers are somewhat contracted and are gradually becoming more so. He wears no splints at the present time.

3. S. L., male, 32, letterpress printer, admitted March 21, 1892, complaining of bent fingers, and in consequence being unable to properly follow his employment.

Condition of hand before operation.—The ring and little fingers of the right hand in a state of forcible flexion; the other fingers of both hands are normal.

Operation on March 30, 1892, *by Mr. Willett.*—Multiple subcutaneous incisions by a small tenotomy knife; in all, nine punctures made between the skin and fascia, and fascia divided by cutting downwards; the fingers were then at once forcibly straightened and bandaged to a hand splint. Splint was removed on April 20, and left off as the skin over the outer side of metacarpal bone, on outer aspect of its palmar surface and on inner side of little finger, had sloughed. The notes say patient left the Hospital improved.

On May 16, 1895, three years after the operation, the state of the hand is as follows:—Both fingers are quite straight; the tense band can still be felt running up to both the ring and little finger of right hand. Patient is unable to flex these two fingers at inter-phalangeal joints, nor can they be forcibly bent to any great degree; the joints are somewhat flattened and thickened. Flexion at the metacarpo-phalangeal joints is perfect. On account of the inability to flex the two joints I have mentioned, he was unable to further follow his employment. So although in his case the fingers were straightened, the fingers became practically useless to him in his occupation. The grasp of the thumb, index, and middle finger is good.

4. E. J. M., 53, porter, was admitted into Hospital on March 16, 1892, suffering from a contracted left ring-finger. It did not much interfere with his work.

Condition of hand before operation.—The ring-finger was bent chiefly at metacarpo-phalangeal joint, so that tip of this finger was bent to within one inch of palm, and little finger also somewhat flexed; all other fingers normal.

Operation on March 18, 1892, *by Mr. Thomas Smith.*—The contracted band of fascia was divided subcutaneously in several places with a tenotomy knife, finger partially straightened and bandaged on to a back splint, which the patient wore for two weeks after the operation.

On May 13, 1895, more than three years after the operation, I find him a cripple with gout, scarcely able to get about.

The condition of the hand is improved, the second phalanx being bent at an angle of 90° with the proximal phalanx; flexion good and powerful. The patient says the operation improved the condition and usefulness of his hand, but states that the finger is gradually getting more bent; the palm of the hand is much indurated.

5. J. F. W., 56, upholsterer, was admitted into Hospital on October 21, 1892, suffering from Dupuytren's contraction of both hands.

Condition of left hand.—Patient is quite unable to extend fully his fingers or thumb; he has a good grasp if anything can be got into his hand; he is quite unable to pick anything up, and thus cannot feed himself. The left hand is the worse of the two; third and fourth fingers are flexed to such an extent that they all but touch the palm.

Operation by Mr. Walsham, October 26, 1892.—Left hand only operated on. The fascia was divided by many subcutaneous punctures in palm and along fingers and thumb; the fingers could be brought out much straighter, but were still considerably flexed; the skin broke down in one place over middle finger. The hand was dressed with salalembroth gauze and bandaged tightly on a back splint.

Patient left the Hospital with index finger quite straight, and other fingers gradually becoming more so. The note says patient left the Hospital much improved.

On May 14, 1895, I saw the patient, and the condition of his hands was as follows:—All the fingers of the right hand were so flexed that they touched the palm of hand, which in consequence was ulcerated. The thumb is bent over the fingers so as to keep them down. In the left hand the fingers are almost straight, but there is very little power in the grasp, and fingers cannot be well flexed; a dense band of fascia can be seen extending from base of index finger to base of first phalanx of thumb, and binding them tightly together. Patient says his condition is somewhat improved, as he can feed himself and do little jobs, as he has considerable power in the thumb and little fingers.

6. W. C., 43, barman, admitted into Hospital on September 12, 1891, suffering from contraction of palmar fascia in both hands.

Condition of hands before operation.—Right hand—little and ring fingers are much flexed and cannot be extended; middle finger affected to a less degree.

Left hand—corresponding fingers of left hand affected to a less degree.

Operation on right hand by Mr. Walsham on September 15, 1891.—Several punctures were made with a tenotome, in some cases passed between the skin and fascia, and edge directed downwards; in others, the knife was passed beneath the fascia and cut upwards. Fourth and fifth fingers were then brought into good position and extended on a back-splint. Discharged wearing splint.

On May 10, 1895, I saw the patient, and the condition of his hands was as follows:—Left hand—the three inner fingers are flexed on the metacarpo-phalangeal and first phalangeal joints in such a way that their tips are within half an inch of palm of hand; tense bands of fascia can be seen running up to them and binding them down.

In the right hand, which was the one operated on, and was by far the worse of the two at that time, the ring and little fingers are almost straight, but there is great loss of power in these two fingers, and considerable difficulty in flexing them; says the operation did him some good, as he thinks his hand would soon have closed altogether. He now wants Mr. Walsham to operate on the left hand, as it is practically useless to him. He wore the splint eight weeks after operation.

7. H. S., male, 33, costumier, admitted into Hospital on October 21, 1891, suffering from "bent" fingers.

Condition of hand before operation.—Fifth finger of left hand bent so as nearly to touch the palm. Fourth finger of same hand bent to a less degree. Thumb also slightly affected.

Operation by Mr. Walsham, October 22, 1891.—With a sharp tenotome, several subcutaneous incisions were made over the ulnar side of the hand, dividing several bands of fascia binding down the fourth and fifth fingers; puncture also made over the ball of thumb, dividing the fascia holding that down. The fingers were firmly bandaged to a back-splint. Patient wore this for one month.

I saw the patient on May 13, 1895, three and a half years after the operation.

The patient says all the fingers were put quite straight after the operation, now the little finger has gradually gone back to its original contracted condition, whilst the ring-finger is quite straight; movement and power of grasp good. There is a tense band of fascia spreading from base of the index finger of this left hand to the base of the thumb, and drawing them together. In the right hand there are three puckerings of the skin in the

first transverse fold, corresponding to the three inner fingers, which are slightly bent. On the under surface of the left foot is a tough subcutaneous mass, over which the skin is freely movable. It is under the metatarsal bone of third toe, which is in no way contracted. Patient is quite satisfied, and has derived great benefit from the operation.

8. T. E. H., male, 42, Custom-house clerk, admitted into Hospital on April 21, 1890, suffering from contraction of right little finger.

Condition of hand before operation.—The little finger of right hand is bent at metacarpo-phalangeal joint in such a way as to be within an inch of palm. The ring-finger of same hand is affected to a less degree.

Operation by Mr. Walsham, April 21, 1890.—Multiple subcutaneous incision of the tense band; fingers quite straightened and put upon a back-splint. This splint the patient wore for one month after operation.

Patient writes to me on May 10, 1895, five years after operation:—Ring-finger is quite straight, little finger almost so. He is quite satisfied with the operation, and says he can the better follow his occupation. The little finger is gradually becoming more bent.

9. William S., 39, gold lacemaker, admitted into Hospital August 13, 1890, complaining of contraction of left ring-finger, which interfered with his work.

Condition before operation.—The left ring-finger at the first phalangeal joint is bent at an angle of 60°, and a tense band of fascia can be felt running up to the digit, keeping it in its bent condition. Condition of the right hand was natural.

Operation by Mr. Lucas, August 19, 1890.—The tense band of fascia was divided in several places by subcutaneous incisions and the fingers partially straightened. Gradually the finger was more extended, and on August 25, 1890, patient left the Hospital with the finger almost straight, wearing an anterior finger-splint, which he continued to do for six weeks.

In May 1895, four and a half years after the operation, the condition of the hand is as follows:—The second phalanx of left ring-finger is bent on the first at an angle of 90°, and a tense band of fascia can be felt running from the palm to the finger. Patient says contraction does not appear to be progressing, and he is now able to do his work well and finds no inconvenience. He says "the operation did him a lot of good," and there is now slight dimpling of the skin over the metacarpal bone of the ring-finger of the right hand.

No.	Sex.	Age.	Occupation.	Duration.	Hand Affected.	Family History.	Past History.
1	Male	57	Printer	6 months	Both hands. 1st appeared in right	Family phthisis. 1 son acute rheumatism and chronic rheumatism	Pain and swelling big toe 1 year ago; also sub-acute attacks for years; also cramps in legs. Fibrous band along dorsum of penis, described by Paget as a gouty thickening and hardening of fibrous sheath of corpus cavernosum.
2	Female	67	Housework	3 years	Left hand	No family history of gout or rheumatism	7 years ago primary syphilis. No history of gout or rheumatism.
3	Male	57	Printer	6 months	Both hands. 1st in right	Family phthisis. 1 son acute rheumatism and chronic rheumatism	Pain and swelling big toe 1 year ago. Also sub-acute attacks.
4	Male	59	Bootmaker	14 years	Both hands. 1st in right	Father suffered from gout and Dupuytren's contraction	Suffered from gout for years. Tophi in both ears and fibroid induration of corpus spongionum.
5	Female	53	Housework	...	...	No history stated	.....
6	Male	37	Brewer's drayman	...	Right middle finger	No family history in notes	Ran a piece of iron hooping into hand 5 years ago; does not know if it was extracted. No history of gout or rheumatism. Heavy drinker.
7	Male	35	Iron-fitter	3 years	Both. Began in left	No family history stated	Acute rheumatism 8 years ago. Syphilis 9 years ago.
8	Male	40	Bricklayer and sail-maker, using the ulnar side of hand extensively	2½ years	Right hand	No family history known	14 years ago "rheumatic fever." Rheumatic pains at times.

9	Male	32	Letterpress printer	6 years	Right hand	No history given in notes	.....
10	Male	32	Grocer's porter	5 months	Left hand	No history given	5 months ago burnt thumb, suppurated; cellulitis of whole hand. Opened; all fingers stiff.
11	Male	60	Carman	...	Both	No family history given	Potus laceration dorsum right hand, compound fracture 4th metacarpal bone, contraction 4th and 5th fingers right hand, 3rd finger left hand.
12	Male	53	Porter	6 years	Left	Father had a similar finger	"Gout in big toe," and suffers from periodical attacks of pain in joints; 2 fits.
13	Male	56	Upholsterer	5 years	Both hands	Father had gout and "painter's colic." Mother asthma	Gout in left hand for about 8 years; generally suffers from gout in cold weather. No history of rheumatism or syphilis.
14	Female	15	Needlework	7 years	Both hands	Father suffers from rheumatism	No history of gout or rheumatism.
15	Male	43	Barman	8 years	Both. Began in right	Brother suffers from gout	No history of gout or rheumatism. Potus.
16	Male	33	Costumier	5 years	Left	No history in the notes	.....
17	Male	44	...	9 months	Left	No family history in notes	Acute rheumatism and rheumatic pains in joints.
18	Male	38	Butcher	2 years	Right	Brother died of phthisis	Chronic rheumatism. Right testicle removed for tubercular testis; writer's cramp lately.
19	Male	42	...	9 months	Right	Family history not given	No history of gout or rheumatism.
20	Male	39	Carpenter	10 months	Left	No family history known	3 years ago syphilis. No gout or rheumatism.

No.	Sex.	Age.	Occupation.	Duration.	Hand Affected.	Family History.	Past History.
21	Female	43	Scrubber	6 years.	Right	No history of gout in family history or in past history	.....
22	Male	37	Flute-player	4 years	Right	No family history in notes	4 years ago injured hand with cricket ball; after this coutraction started.
23	Male	53	Carpenter	...	Both	No family history in notes	Much employed with William's nail-puller, which requires much pressure with palm of hand; has also carried heavy bag in hand for long distances. No past history in notes.
24	Male	58	Gardener	8 months	Both	No family history in notes	No traumatic history. Has suffered from gout in big toe and rheumatics; acute rheumatism 10 years ago. Urine: abundance of lithates and traces of albumen.
25	Male	56	Labourer	20 years	Both	No family history in notes	1st attack of gout 2 years ago in right metatarso-phalangeal articulation; 14 days after left foot also attacked. Suffers from chronic rheumatism and emphysema.
26	Male	54	Bricklayer	4½ years	Both. Began in left	No family history in notes	Small-pox and typhoid fever. No history of gout or rheumatism.
27	Male	47	Bricklayer	4 years	Both hands	No history of gout	No history of gout or rheumatism or other illness.

28	Male	29	Clerk	10 years	Right hand	No history of gout	Severe burn on right ring-finger when a child; a small hard lump formed 10 years ago in palm right hand, since then ring and little finger contracted. No gout or rheumatism.
29	Male	41	Labourer	4 years	Right	Father suffered from "gout in big toe"	Acute rheumatism 20 years ago. 2 years ago gout in big toe. 3 attacks since.
30	Male	40	Bookbinder	6 years	Both	1 brother similarly affected; does same work	No history of gout or rheumatism. None of 40 employés except brother thus affected.
31	Male	44	Railway guard	5 years	Both. Began in right	No family history in notes	No past history in notes; began right hand 5 years ago; to give this a rest put on brake with left hand, which also became affected.
32	Female	50	Nurse	4 years	Right	Father and mother both suffered from gout	Acute rheumatism 15 years ago. Gout right "big toe" 4 years ago.
33	Male	48	Painter	2 years	Right hand	No family history of gout	Has suffered from rheumatism; has had similar affection of left hand and right foot.
34	Male	54	Boiler-maker	2 years	Both hands. Began in left	No family history stated in notes	Acute rheumatism 12 years ago and rheumatic pains.
35	Male	37	Clerk	7 years	Left hand	Father had rheumatism and lumbago. Mother died of apoplexy; had rheumatism	No history of gout or rheumatism. Wound of left palm 27 years ago. 4th left toe affected in same way.
36	Male	34	Hatter	12 years	Right hand	No family history stated in notes	Gonorrhœa twice and a chancre accompanied by buboes. Patient in very bad health, dyspepsia and great pain in region of kidneys.
37	Male	64	Watch jeweller	6 years	Both. Began in right	1 younger sister dyspeptic. Grandfather had gout	3 attacks. Gout in right metatarso-phalangeal articulation. Last attack 7 years ago.

Cases from Kensington Infirmary, by Permission of Dr. Potter.

No.	Sex.	Age.	Occupation.	Duration.	Hand Affected.	Family History.	Past History.
1	Male	62	Gunner in army	6 years	Both. Left first	No family history known	Contraction came on 14 years after leaving army. No history of gout. Suffers from chronic rheumatism in shoulders.
2	Male	77	Labourer and hawker	5 years	Right hand	No family history of gout or rheumatism.	Suffers from chronic rheumatism, which affected right metatarso-phalangeal joint. Tophi in ears. Cataract.
3	Male	79	Plasterer	5 years	Right hand	Mother suffered from gout. Father from chronic rheumatism	Suffers from chronic rheumatism.
4	Male	70	Labourer	?	Both hands	No family history of gout or rheumatism	Has had gout in big toe and has tophi.
5	Male	38	Painter	2 years	Left hand	Mother rheumatic gout. Father none	Has had gout in big toe. Is in infirmary for acute rheumatism.
6	Male	75	Painter	?	Right	No family history of gout or rheumatism	No history of gout or rheumatism. Very slight puckering of skin; no contraction.
7	Male	72	Nobleman's servant	7 years	Left	No family history known	Acute rheumatism at 15, since then chronic rheumatism. Toes much deformed.
8	Male	89	Baker	6 years	Left	No family history known	Has suffered from gout and chronic rheumatism in shoulders.
9	Male	78	Horsekeeper	?	Left	Slight case	Gout 20 years ago; also suffers from chronic rheumatic pains. Tophi in ears.

10	Male	72	Labourer	?	Right	No family history known	Has had rheumatic fever, in bed 7 weeks, and rheumatics on and off. No gout.
11	Male	63	Mason	8 years	Right	No family history known	Has always suffered from chronic rheumatism and gout.
12	Male	93	Tailor	?	Left	No family history known	Chronic rheumatism. No gout.
13	Male	34	Horsekeeper	?	Right	No family history of gout or rheumatism	Slight case. Is suffering from acute phthisis.
14	Male	54	Baker	2 years	Right	No family history of gout or rheumatism	Severe dog bite before contraction in palm of right hand. No history of gout or rheumatism.
15	Male	65	Clown	10 years	Both hands	Mother had rheumatic fever	No history of gout; had syphilis. Well-marked case.
16	Female		Who could not be found.				

550 patients: 300 males, 250 females. 16 cases of Dupuytren's contraction: 15 male, 1 female.

By kind Permission of Dr. Keats at Greenwich Union Infirmary.

1	Male	78	Joiner	10 years	Both. Left first	No family history of gout or rheumatism	No history of gout or rheumatism. Cancer of œsophagus.
2	Male	71	Painter	23 years	Both. Right first	No family history known	Has had several attacks of gout, and also suffers from chronic rheumatism.

Only 2 cases out of 700 patients examined, amongst whom were many sailors. No female case.

1	Female	76	Housework	10 years	Right hand	Father suffered from gout	Chronic rheumatism for many years. No history of acute gout.

1 female case in 300 patients. Many with hands deformed by chronic rheumatism.

No.	Sex.	Age.	Occupation.	Duration.	Hand Affected.	Family History.	Past History.
1	Male	50	Engineer	12 years	Left. Little finger	No family history of gout or rheumatism. Mother died of asthma	12 years ago severe crush over hypothenar eminence, since then contraction of little finger. Rheumatic fever 12 years ago.
2	Male	41	Goldsmith	...	Both hands. Began in l ft ring-finger	Brother suffers from gout in big toe	Never had gout or rheumatism.
3	Male	77	Porter	40 years	Left hand little finger.	Brother had gout. Mother had acute rheumatism	Ran a nail into hypothenar eminence about a month before deformity started. It does not get any worse, and has not spread to other fingers or to right hand. Has frequently suffered from gout. Mother had acute rheumatism, brother suffered from "gout in big toe."
4	Male	58	Horsekeeper	5 years	Left hand little finger	No family history known	Suffers from chronic rheumatism. No gout. No history of injury.
5	Male	50	Wheelwright	4 years	Left hand	Mother had acute rheumatism. Father suffered from gout	No past history of gout. Has had syphilis; is suffering from phthisis.
6	Male	65	Porter	30 years	Left hand little and ring finger	Father suffered from gout	No past history of gout or rheumatism.
7	Male	55	Cabinetmaker	3 years	Left hand little finger	None known	Has frequently suffered from gout, and has chronic rheumatics.
8	Male	73	?	14 years	Both little fingers	None known	No gout or rheumatism; always been healthy. Suffers now from bronchitis and emphysema.