Thesis on Suppurative Contracture of the Palmar Fascia

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April 1886.
I have taken for the subject of my thesis, Dupuytren's contracture of the palmar fascia - its causes, symptoms, pathology, diagnosis and treatment.

During the time I have held the office of Assistant Medical Officer to the Manchester Workhouse and Infirmary, the latter containing 1400 beds, there have been ample opportunities of witnessing examples of this disease - and several cases have come under my care for operative treatment. I have examined carefully 1400 males and 1250 females for this affection, and found 170 cases of disease of the palmar fascia - 120 in men and 50 in women. In each case I have taken and recorded careful notes ascertaining its origin, personal cause and constitution of each patient. It is after these cases I have founded my thesis, giving the opinions I have written on the subject. At the end I have given a list of the literature on the subject.

Below the notes of many cases I have attached the photograph of the patient and the deformed fingers. The aim of the photograph is to show the deformity of the fingers and palmar fascia in its various stages - the cases that have come under my care for operative treatment. I have had photographed both before and after operation.
Dupuytren's 'Contracture of the Fingers' as an I
joke to call it. "Contracture of the Palmar
Fascia," or the finger deformity not always
present was first accurately described by
Baron Dupuytren, Surgeon in Chief, to the
Hôpital Général at Paris. It is due to
"Thickening and contraction of the Palmar
Fascia, and its digital prolongations, also to some
affection of the deeper parts of the skin.
"Frequently there is permanent fascia of the finger,
but I see no reason why those cases which
have not gone on to deformity of the fingers
should not be included under the same
heading. I have seen a number of cases
where it was undoubted thickening and
contraction of the Palmar Fascia, and adherence
of skin to the Fascia, and also thickening of
the skin, but no deformity of the fingers
had been produced — in fact it seemed
as though it had stopped short of finger
deformity. The latter case I have
recorded in my paper, thus dividing the
affecting a with cases with 17 of these cases
where deformity of fingers is present and 2
more cases where the affection has not
proceeded far enough to produce finger
deformity.

The cause of this affection has long been a vexed
question. Some maintaining that it is due
to a local cause, that is, local irritation, while
others declare that it has solely a constitutional
origin. I think is due to the particular fielde in
which surgeons have worked. These
I have lately for the subject of my thesis, Inflammation or contraction of the Palmer fascia - its causes, symptoms, pathology, diagnosis and treatment.

During the time I have held the office of Assistant Medical officer at the Manchester Workhouse and Infirmary, the latter containing 1400 beds, there have been ample opportunities of witnessing examples of this disease - and several cases have come under my care for operative treatment. I have examined carefully 1400 males and 1250 females for this affection, and found 176 with disease of the Palmer fascia - 120 in men and 50 in women. In each case I have taken and recorded careful notes ascertaining its origin, supposed cause and constitution of each patient - it is after these cases I have founded my thesis, giving the opinions of various writers on the subject. At the end I have given a list of the literature on the subject.

Below the dates of many cases I have attached the photograph of the patient and the deformed fingers - the aim of the photograph is to show the deformity of the fingers and Palmer fascia in its various stages - the cases that have come under my care for operative treatment I have had photographed both before and after operation.
engaged in consulting practice and surgery to several infirmaries meeting with a different class of patients from those who are occupied in Union work. Thus W. W. Adams says.

During a connection of more than twenty years with the Royal Orthopaedic Hospital, I have seen but few cases of Dupuytren's contracture in the labouring classes. It seems like an affection of common occurrence in the middle and upper classes of society. The cases which have fallen under my observation have generally occurred in clergymen, barristers, traders, men officers in the Army and navy, and merchants. My observations have been chiefly confined to the labouring classes, and I venture to say that it is a common affection in people who have to earn their living by manual labour. The reason why more cases have not been recorded is the fact, that the ordinary working men, take little or no notice of the affection so long as he can manage to perform his work. When the fingers are not too much flexed, they can grip a tool or instrument well enough; it is only when the deformity has become so great as to prevent him earning his living, that he applies for treatment. This fact is well illustrated in the patient I examined, the majority of them, paid it as caused by their particular work, it did not hurt them, as they did not seek advice. The affection is more common in men than women.

Adams - on finger contraction - Page 22.
out of 1450 men examined, whose ages varied from 20 to 90 years, I found 120 who had some thickening and contraction of the palmar fascia in various degrees. 175 of these there was deformity of the fingers, well marked, in the remaining 15 the disease had not proceeded so far as to produce finger deformity.

Out of 1250 women examined, whose ages varied from 20 to 93 years, there were 50 cases of palmar deformity. 23 there was marked deformity of the fingers, in 27 cases the deformity was only slight or none at all.

The average age of men affected was 64 years, the oldest being 88 years and the youngest 18.

Women the average age was 65, the oldest 93 years, the youngest 25. Several cases of Dupuytren are recorded as occurring in young females. J. A. Reeves mentions two cases, one in a young girl of 18 years, the other aged 25. Mr. Law of Manchester informed me that he had seen a well marked example, with finger deformity, in a young girl aged 10 years. As regards the affection occurring in females, I may just mention here that Dupuytren it was regarded as a disease that was confined to the male sex and only recently has it been recognised in females.

A. Little paps. We have never witnessed it in women.

Adams paps. I have never witnessed it in women. Dupuytren himself does not mention it, in his

work as occurring in females. * H. A. Heine appears to have been the first who pointed out that it does occur in women; he mentions 5 cases. Afterwards Adamo, though he keeps in his work that he had not seen it in women, records one well marked case in a lady age 66, at the same time he records a case of what he calls "spurious syphilis" occurring in a lad.

H. A. Louton, also recorded 2 cases, but none in middle aged females; one was a "spurious cicatrix", the other engaged in housework.

L. A. Carter relates the case of a lady aged 89, the fingers commencing to contract two years previously - her sister had a similar affection.

Boyle Smith in a valuable paper recording 70 cases of syphilitic contraction, mentions 11 cases of well marked deformity in the fingers, and 15 cases of indurated, thickened and contracted skin alone - 16 fingers some of the worst cases.

The occupations followed by the patients affected is of some interest as showing the various trades in which it may occur. They are as follows:

2 men - Baker 1, Blacksmith 1, Bricklayer 1, Brickmoulder 1, Brewer 1, Boatman 1, Mason - Masoner 1, Chimney Sweeper 1, Compositor 1, Clerk 3, Cabinet Maker 5.

* British Medical Journal 1881, page 1049
* British Medical Journal Jan. 21, 1882, page 84
* Feb. 10, 1882, page 84
* February 7th, 1885, page 278.
Chemist 1, Cotton Spinner 8, Carter 1, Dyer 3, Driller 1, Engine Driver 1, Engraver 1,
Rustar, Cutter 2, Gardener 1, Servantkeeper 1, Gunning Order 1, Hawker 2, Potmender 3,
Iron Worker 1, Joiner 4, Labourer 28, Machine Worker 2, Mechanic 2, Painter 2,
Porter 2, Packing Case Maker 1, Plasterer 1, Railroad-Wheel Baker 2, Shoemaker 6,
Sick Weaver 6, Soldier 2, Steam Hammer Worker 1, Starcher 1, Wood Turner 2. To
remaining Cases had not followed any particular kind of employment.

Females - Charwoman 6, Laundress 1, Laundry 2, Hawker 1, Housewife 1, Triangle Turner 1,
Joiner Worker 8, Machinist 1, Servant 2, Sick Worker 2, Shoemaker 1, Stockinger 1,
Tailoress 5, Watchwoman 9, Weaver 2, Umbrella Maker 1.

It will be seen from the above list of occupations, that in the majority, the sufferer of the hand would
be prejudiced to some form of irritation, more
or less. And in nearly all the cases,
how recorded, the patient has voluntarily said it was caused by the particular employment in
which he or she was engaged. In a few
Cases they have not been able to assign any
Cause for it.

I think that in a great number of cases, the Cause is
a local one - I mean, particularly struck with
the local lesion that many of the Patients
presented, they were free from any disease
likely to produce deformity of the hand, such as
Affection of Skin - Case 7, a female,
well illustrates the origin of the disease from
Local irritation, the woman assiduously kept her husband at shoemaking, using the tools in her right hand. Soon afterwards, the finger became drawn towards the palm, the left hand remaining normal. The pain she has always been a steady woman. There is no history of phrenology or evidence of it. We know that intermittent pressure causes hypertrophy of an organ or part of one, and it seems very probable that the intermittent pressure of various kinds of tools upon the palm, set up sufficient irritation to produce hypertrophy of the skin and Palmer fascia. I do not deny that at local irritation produces it in every case, for in several cases, I have not been able to trace the disease to a local cause.

1. Cripps, p. 37: [PARACELSIUS] says: "Most of those who are thus affected had been in the habit of using force with the fingers of the hand and of handling hard bodies, such as a hammer, an axe or a plough. It is found also in masons, who lay hot of stones and the ends of their fingers, also in gardeners. It generally attacks those who are compelled to use the palm of the hand."

2. Cripps, p. 37: "It usually results from frequent and continued pressure on the palm of the hand, as in leaning on a pound or indeed all writing much, or in those trades in which an intermittent pressure has been pressed into the border of the palm."

3. Cripps, p. 37: "It is seen in drawing, book and map making and"

Subject to the condition - it is also thought that
pulling, pressure from the whip handle in driving
and many other forms of local irritation may
produce it."

My experience of the cases I have recorded
certainly bears out the above statements. I have
noticed it in several patients who were left-handed,
or had to use the left hand most in their work,
and the hand deformed most was the left. Case
No. - with photograph will illustrate this fact,
the left handed in this work and there is very marked
deformity in that hand, the other hand being only
mildly affected, etc. Eq in is a similar
instance, and I have seen many others. Another
fact in favor of local irritation being a cause, is
that it is not the whole of the palmar fascia
that is affected, but only part of it, in many
cases. The part of palmar fascia most
commonly affected is that in line of ring
finger, more especially to its ulnar side, in
fact the ulnar side of the central piece of
palmar fascia, and this would seem to be the
part most liable to irritation in lifting heavy
weights, whereas a bavver to the pressure
comes to be borne more on the ulnar side of
the palm and also at the transverse
palmar fold, for this fold is just opposite
the metacarpophalangeal joint where flexion
takes place and here very frequently in
superfeters, the phi and fascia are found
intimately together.

Injury. Local injury is undoubtedly a starting point
of the disease in many cases. Several of patients
have a distinct history of having received,
In injury and from afterwards the deformity had followed. The wound was produced in some cases but it had been crushed or severely bruised. In other cases, a wound was the starting point. Since making up the list of cases, I have seen a case in a surgeon's assistant. He received a wound of the right palmar fascia, there in evidence of the erectile in the palm, the little and ring finger are almost completely flexed in the palm, and in the delivered case, a distinct thickened line of fascia James to each of those fingers. Case 5 will illustrate different forms of irritation setting up deformity of the fascia. He boy first received a stab in the upper part of his right fifth finger. It produced a lesion and was followed by thickening of fascia of that part and down across the palm of hand. Next he was struck on right index finger with a stick, no wound produced afterwards. James became thickened, producing a distinct band from joint phalanea along its ulnar side to second phalanea. Afterwards, he received a bruise on palm of left hand, producing the deformity described. From the above fact, I think it is proved that local irritation injury certainly are sufficient to produce deformity. But there are a number of cases in which we must look for something else as a cause, for we can get in behalf of injury a local irritation. There are certain facts which lead me to think that there is a constitutional cause.
in cases where the fingers are deformed. Where there is no deformity — Several of the photographs shew the almost perfect symmetrical character of the disease — in cases 5, 9, 10 & 13.

2. It is sometimes hereditary.

3. It sometimes occurs in the feet.

In the age at which it appears.

1. In regard to the symmetrical character of the disease. Sir James Paget says, "that symmetrical diseases depend upon some morbid material in the blood." What the precise nature of the "morbid material" is, I have not been able to ascertain definitely, though I have carefully examined all the patients whose cases I have recorded.

2. It is of a Rheumatic nature. Many writers have held that Rheumatism causes it, but my cases certainly have not proved it. The majority and not from any signs or giving any history of Rheumatism — the Maen

3. 50 gave a history of Rheumatism, 10 of these only a few had had it severely, two or three describing an acute attack — 50 gave no history of Rheumatism. Whatever. 50 women. Only 6 of the cases gave a history of Rheumatism. Several of the cases showed some evidence of Rheumatism of enlargement of the joints, but upon inquiry it had only come or after the deformity had taken place. The is a deformity of the fingers, produced by Rheumatism. It is entirely different to deformity. There had one case photographed.

Lectures on Surgical Pathology. Sir James Paget.
to show the difference — in Rheumatism there is generally pain, more or less, in all the joints; whereas in Deformity there is not.

R. Gruber says: "The affection is not caused by any particular occupation, but is part of the Arthritis changes accompanying Rheumatic Arthritis or Rheumatism but."

Griechon says: "that when it occurs in patients in the prime of life, without any apparent exciting cause, he has always found it associated with a Rheumatic or Gouty Diathesis."

But the joints in a case of Deformity are singularly free from any deformity, unless it be in cases where the fingers have been for a long time in a flexed position; then frequently I have seen the joint between the first and second phalange enlarged, but it seems to be due to an Arthritis set up by the long continued flexion of the fingers — in Case I, a female patient photographed, it is a good example of Deformity; yet there is not the least evidence of Rheumatism or Gout; the patient is a healthy woman in every way. And I think I cannot agree with the theory that Rheumatism causes it.

Is it due to Gout? In only one case could I get a distinct history and evidence of Gout; yet many excellent authorities attribute it as a constitutional cause — in fact some say it is the cause — it may be a cause in some.

"Surgie's Vade Mecum" by R. Gruber — page 696.

Cases, but have no evidence to prove it in the patient I have examined. It has been no unusual
feature in the history of many of the most
prominent cases of deformity, as we look back
upon the early attacks of pain which we so frequently find in infancy.

Adams says: "My own opinion is that it always depends
upon a constitutional factor rather than any local cause, and
essentially regards it as depending upon a nervous
diathesis." He gives several examples when the
patient had undoubted symptoms of Scutch and quotes
a case of Corona Hawkins, who had to defer
the operation on account of an attack of Scutch.

Sr. Amos Paget says: "The contraction often depends
upon a nervous diathesis."
hands of Plantar fascia from to the toes and to produce this deformity. I have seen one case. Surgeon records a family of three suffering from it in its feet.

4. The age at which it appears, I have added this because in some well-marked cases it does not come on until late in life - we know that some constitutional diseases, such as tetanus, do not make their appearance until the patient is well advanced in years. This fact may be of service in proving its constitutional origin in some cases.

From the above facts I think that there is a constitutional origin for this deformity, but a whole form at origin; we do not know.- Another theory has been brought forward as to its origin, namely, the nerve-muscular theory.

3. Little says, that nerve, muscle and tendon are the prime agent in the contraction, and not the fascia in Desjerienne and subsequent writers maintained.

3. Noble Smith, in recording his present cases says, "I have had 25 cases. When I saw, I examined the tendon of the tibialis longus muscle and found it tense and prominent in every case. Perhaps contraction of the muscle may be the first marked condition and by its constant action irritates the fascia and is cause it to thicken and contract." In favor of the above theory I have met with a few cases.
where the tendon of the palmaris longus muscle was partly tense; in two cases it was very tense, pressure on the palmar fascia increasing the prominence of the tendon above the wrist, but upon careful inquiry it had come on after the deformity of the fingers, as appearing secondary to the actual disease. Dr. Fisher says this.

Much may be said of contraction of the palmaris longus muscle in not the strict Medical condition which occurs. I have examined a great number of cases in the early stage and have never found the palmaris longus muscle in an abnormal condition.

Alcohol has been attributed as a cause—very few of the cases I have records have been total abstainers; in fact the majority have indulged very freely at some time of their life—Dr. again two of the most marked cases. In 1 in females and 5 in men, were total abstainers—As the alcohol theory cannot go very far as a prominent cause.

Dr. Reeves pays Sample relating a case in which he considered it was due to alcoholism, and which disappeared when beer and spirits were forbidden, but reappeared on the man resuming intemperate habits. It finally disappeared when he became a total abstainer.

2. Dr. Reeves on Bodily deformities, page 357.
SYPHILIS AS A CAUSE. — The same author (Reeve), says that Pictet and Recard have each described cases as due to SYPHILIS, some of which yielded to Solute of Potassium.
So to plan of the various causes of DEPRESSED CONTRACTURE. — He can be no doubt that local irritation and local injury did produce it in many cases; the fact is support of the use of BROMIDES to treat it. It has also a constitutional origin — but it has not been definitely proved that any one a particular Mortal or Material is the real cause, probably there are several Constitutional Causes.
The Nervous-Muscular Theory, Alcohol and SYPHILIS we all possible Causes, but the evidence for them is so small that they must be looked upon as Doubtful Causes.

SYMPTOMS. — The disease comes on so gradually and without any pain, that the patient is perfectly aware of it while he finds some hardness of the palm, or some difficulty in perfectly extending one or more fingers. In the early stage of the disease, there appears thick pustules of fascia and skin adherent to each other, in line of one or more fingers, generally the long fingers. — This condition may remain a long time without causing the patient much annoyance. It does not prevent him from using his hand. As the deformity advances and the fingers become drawn towards the palm, the hand becomes almost useless, especially when two or three fingers, in each hand, are implicated with disease. The hand cannot grasp any tool or instrument properly and is often prevented from following his usual
employment. Taking a well-marked case of deformity of the fingers, we generally find that the skin of the palm is puckered and depressed here and there, it is adherent to the fascia below and cannot be moved freely over it. Sometimes the skin is very much hypertrophic. It often thrown into arched folds, and the concavity towards the finger deformed and the convexity towards the wrist. The fingers are bent towards the palm, most commonly at the metacarpophalangeal joint and first phalangeal joint. Sometimes the finger is flexed at the second phalangeal joint. The extent of flexion varies; it may be one joint, especially if the base of the middle finger is inserted into the second phalanx. Then it may be flexed at the terminal phalanx, the finger showing the terminal phalanx and touching the palm of the hand. On the middle finger, it may be deformed. The patient cannot straighten the fingers, if one attempts to do so, it leaves him pain. The fingers are permanently flexed. On attempting to straighten them, some low-like cords of fascia can be felt and seen standing out distinctly in the palm. There are especially marked below the transverse palmar fold, where the palm to the fingers, are inserted, generally into the first and second phalanges. Above the metacarpophalangeal articulation, the cords generally become fused and pass towards
the wrist - do you ever see a distinct whitish
pale streak passing from down part of arm to
an individual finger, and it can be
grasped between finger and thumb.
Lazarus of Delmar's fanges. Muscle above the
wrist may be prominent or not. When the
pressure on the thenar fascia increases the prominence.
Thumb may
be affected, the frequently a distinct band
of fascia passes along its palmar surface,
from upper part of Delmar fascia.
Often the patient will give a distinct history
of the disease arising after an accident, as
some wound of finger - there maybe
evidence of an old injury or not. He may
give a distinct hereditary history and not I
unfrequently they say it had come on after
an attack of rheumatism. The joints
between the joint and second phalanges are
frequently enlarged by a chronic arthritis, set
up by long continued flexion. One or both hands may be affected - the
deformity may be perfectly symmetrical, or
there may be mere deformity in one hand
than in the other - there maybe deformity
of fingers in one hand and merely thickening
and contraction of fascia in the other, or the
other hand may be perfectly normal, or
in both hands. The fascia then may be
thickened, adherent and puckered, but no
deformity of fingers produced. In
every case the right hand was principally
affected in both cases.
The following is the particulars of the fascial
deformity I have recorded it carefully.
as it may be of assistance in determining the exact cause of the affection.

In 17 cases the deformity of the fingers, the right hand was more frequently affected than the left. As regards individual fingers, the ring finger alone was most frequently affected, next in frequency the little, after the middle and next the index and thumb. Ring and little fingers were most frequently affected together.

From the cases here recorded, both hands were affected 47 times, of these the right hand 29 times and the left hand 18 times, chiefly that one hand was more affected than the other.

Both hands were equally affected 13 times.

Right hand alone 6 times.

Left hand alone 6 times.

In 16 cases the fascia was affected alone in one hand and the fingers in the other.

As regards fingers deformed:

Little finger alone in right hand, 4 times.

Little finger alone in left hand 7 times.

Little finger alone in right hand 7 times.

Ring finger alone in right hand 4 times.

Ring finger alone in left hand 5 times.

Middle finger alone in both hands 3 times.

Index finger alone in right hand once.

Thumb in right hand 3 times, but there was also deformity of one or more fingers.

In 6 cases, where more than one finger was deformed:

Ring and little fingers in both hands 8 times.

Ring and little fingers in left hand 8 times.

Ring and little fingers in right hand 2 times.
Little, ring & middle fingers in both hands 6 times -
Little, ring & middle fingers in left hand twice -
Little, ring & middle fingers in right hand once.

Middle and ring fingers in both hands 3 times -
Middle and ring fingers in right hand once.

In 2 cases, cases of fascia indication, thickening and contraction of fascia, with ulceration of skin, but no deformity of fingers.

In both hands, it occurred 30 times, but 24 of these were equally affected - The right hand chiefly, 14 times - the left hand chiefly, twice.

The fact of palmar fascia affected and standing out as distinct bands, varying to particular fingers, was as follows:

I. line of ring finger alone, 2 cases, in right hand, 1 in left hand.
II. line of middle finger alone 1 case - in right hand
III. line of ring finger in both hands 4 times.
IV. line of ring & little fingers in both hands 10 times
V. line of ring & middle fingers in both hands, 4 times
VI. line of - - - - - in left hand, once
VII. line of ring, middle, little fingers in both hands, once.
VIII. line of these 3, middle fingers, once.

In 15 cases, one hand alone was affected -
15 cases, right hand.
5 cases, left hand.

The part of fascia principally affected was as follows;
I. line of ring finger alone 18 mm., in right hand
II. line of - - - - - alone twice in left hand
III. line of ring, little fingers, twice in right hand
IV. line of ring, little fingers, twice in left hand
I line of little, ring & middle finger once in righthand
2 line of little, ring & middle finger once in lefthand
1 line of middle finger alone twice in righthand
1 line of middle finger twice in righthand
1 line of index & middle finger once in righthand

In females, the following are the particulars:

Where the fingers were deformed:

Both hands, once affected, but unequally in 6 cases.
Righthand chiefly in 6 cases.
Lefthand chiefly in 1 case.

Both hands, and affected about equally in 11 cases.
Righthand was alone affected in 16 cases.
Lefthand was alone affected in 1 case.

In 3 cases the fingers were deformed in one hand, the fascia in the other.

As regards individual fingers deformed:

Little finger alone 10 times.
Little finger in righthand 4 times.
Little finger in lefthand once.
Ring finger alone in righthand 3 times.
Ring finger in lefthand once.
Middle finger in lefthand once.
Index & middle fingers in righthand once.
Little, ring, middle, & index finger in both hands once.

1 case of fascia deforming, but no deformity of fingers.

Both hands affected 9 times, of these
the right hand chiefly 8 times.
the left hand chiefly 2 times.

Both hand equally affected 9 times.
Righthand alone affected 3 times.
Lefthand alone affected 3 times.
and regard to part of S. affect,"
the S. & lower of right ring finger 5 times
the left 3 times
the ring finger in both hands twice
2 line of ring little finger in both hands twice
2 line of ring, little finger in right hand once
2 line of ring, little & middle finger in left hand, once
2 line of ring, little & middle finger in left hand, once.

From the above particular it will seem that the hand chiefly and in work, was to one most frequently affected.
Pathology. Before describing the pathology of definitional contraction, Price described the normal condition of the palmar fascia and its relation to the skin, as both the skin and fascia in the vast majority of cases seem to be implicated in the disease.

In dissecting the skin from the palmar fascia one particularly notices the number of small processes of fascia, passing from the palmar fascia to be inserted into the skin at various points. They are particularly numerous at the transverse palmar fold - the space between these small bands, an occupied by adipose tissue, which is thickest between the digital processes of fascia. The chief part of the skin we have to deal with is the central and larger piece - this is a very thin layer of fascia on each side of it, covering the muscles of the thumb on one side and the muscles of the little finger on the other. They appear to be distinct from the central piece.

The central piece is a strong layer of white fibrous tissue, almost triangular in form, connected at its upper end, that is the joint near the wrist with the annular ligament; it also receives additional strength here by the insertion into it of the tendon of the palmar longus muscle. It expands as it passes forwards and divides at the junction of the metacarpus and the phalanges into four digital processes which pass to be inserted into the fingers. While they divide, they are connected together by transverse bands of fascia, each digital process divides again into two processes to be inserted into the sheath of
the flexor tendons on the fingers, anteriorly, and laterally into the peristem of the first phalange I being prolonged into the periistem of the second phalange, for about half its length.

A regard to pathology, it is a well recognized fact that the principal tissue affected in the palm is the palmar fascia, in all cases, and in the majority of cases the skin also is affected, either primarily or in some cases secondarily to the fascia. How few of my cases the skin has appeared to be normal? The tendons are not affected, unless the fingers have been in a condition of flexed flexion for a long time, then they become contracted. This accounts for those cases where the "ten-wound" operation is performed, the fingers come down perfectly straight when a fair amount of pressure is exerted upon them, but as soon as the extending force is taken off, the finger becomes semi-flexed and this is due, I think, in many cases, to the condition of the flexor tendons. The joint are normal, except in a few cases from continued deformity, the first phalangeal joint frequently become enlarged, apparently from a chronic arthritis.

The "ten-wound" method of treatment, enables one to demonstrate, very well which tissue of the palm it is that produces the deformity. It is undoubtedly the palmar fascia and its processes by their insertion into the skin, sheath of flexor tendons and periistem of phalanges. The insertion of the processes into the skin
appear to increase the deformity, for upon their division the deformed finger can often be a little extended, especially when the fasciculi which are inserted into the skin by the sides of the fingers are divided. These processes also produce the puckering of the skin, which is frequently so well marked in the first case of this affection; as soon as these little bands are divided, the puckering and depression disappear, the skin becoming smooth.

The palmar fascia is thickened and contracted, sometimes the whole central piece can be felt to be thickened; pending fasciculi into each finger and in causing flexion at the metacarpophalangeal joints, but more frequently it is one part of the fascia which is affected and especially that to the ulnar side. The fascia is frequently very thick, indeed, I have seen it thick enough deep into the palm at the web of the fingers.

The part running forward to the fingers deformed, in the space thick like the string of a bow, even exposed feel it can be picked up between the fingers and thumb, I feel, hard and tendinous. The lord of fasciculi who directed it. I have often seen it a quarter of an inch thick, the lesser part of the tendon band of fasciculi, where processes of fasciculi pass from its under surface to be inserted into the heads of the flexor tendons, both in the palmar and fingers. The main part of the fascial band is inserted not only into the heads of the flexor tendons, but also into the peritoneum.
by side of the first and second phalanges. Sometimes a slight bend of some thickness, comes from the skin over the side of the hand, it is near side, (this was well marked, in case of operation on the right hand, a slight of fascia ran into their 3rd side of little finger, at its insertion into the phal the hand was very much pressed). Very often we meet with distinct thickened bands of fascia along its fingers, when it runs from one phalanx to the other. This can well be marked in case of small and care in females. See photograph.

With regard to the relation of phal to fascia-over the centre of the long medial bend, the phal is frequently thick and adherent to the fascia beneath, in fact in dissecting the hand, the phal and fascia are often so intimately blended that it is difficult to say what the phal ends and the fascia commences. In the subcutaneous fat has become absorbed, either by pressure or irritation of the part. Some writers as 1. D. von der GmbH, of Berlin, believe that the condition is due to the absorption of numerous small deposits of fat, which in healthy young and middle age subject exist between the connective tissue bands of Palmer fascia, and its short fibres which connect the fascia with its subjacent integument. This fascia consequently under the influence of pressure falls into a state of chronic inflammation, and becomes contracted.
But in all cases the fat does not disappear, especially in those cases where no local cause can be assigned for the deformity. In 1 case 1 in females, and in one or two cases in females, the fat did not appear to be at all diminished when the skin has been so intimately blended with the fascia, it has nearly always been in cases where there has been local intermittent pressure on the palm.

In 2 other cases, the palm in Hyperplastic, this is very common indeed when the patient has been accustomed to manual labor.

What is the exact pathological nature of the affection? It can not be that the skin is thickened, it would appear to be Hyperplastic. In some cases where intermittent pressure causes hypertrophy and contracture pressure atrophy. In the case where the skin was very thick, there was a distinct history of intermittent pressure on the palm by someone who took an instrument to replace its fascia. There is little doubt that the condition of fascia is, in a condition of Hyperplasia, that is, something more than a simple hypertrophy. Even in those cases dissected out, there would appear to be not only an increase in size of these elements, but also an increase in their...
number. I have seen the fascial bands very thick indeed, so they pass upwards towards the wrist they become blended into one thick mass and frequently the fascia dips down deeply into the palm especially near the web of the finger. Case 1 in which the fascia here was very thick indeed I passed down deep into the palm. I have seen several other cases very similar. I have examined several specimens microscopically and it merely reveals an increase in size and number of white fibrous tissue elements.

Some writers have looked upon it as really a chronic inflammatory change, others deny this for the reason that if it were due to inflammation the patient would have pain. But a slow form of chronic inflammation may go on and yet no pain be produced throughout its progress. It is very probable that in a number of cases where the cause can be traced to a local one, a chronic inflammation is set up, of the deeper part of the skin, resulting in hypertrophy of skin and fascia to what it is attached, the fat becoming absorbed and no adhesion between the two structures would readily take place. The process of fibrous or chronic inflammation would account for the condition of contraction that is so marked; in fact it becomes ultimately a kind of cicatrizial hypertrophic tissue, the new material formed having a great tendency to contract. This is borne out by the slow progress of the disease, as the new tissue becomes more fully organised, contraction becomes more complete.
I have seen thick induration of the skin and very little atremes of fascia.

Some of my patients described the disease as commencing by a "Seal", a common name in this part of the county for a stinger, being compelled to continue their walk, this became hardened, and afterwards the fascia began to thicken and allow the fingers towards the palm. I think the disease often commences in this way only the form of irritation is slight. The case is not so noticeable.

Describe below Dr. Young's account of his name.

Dr. Young was the first to frame that the palmar fascia was the tissue chiefly concerned in the disease. He gives the following account of a case he had an opportunity of examining.

"Having removed the skin from the flexor of the hand and from the palmar surface of the fingers, the fold, and wrinkles which it presented previously entirely disappeared.

So it was evident that this appearance, which it assumed during the affection, did not appertain to the skin itself, but was superimposed to it. Secondly — continuing the dissection, I had here the palmar fascia, and observed with surprise that it was in a state of tension, contracted and diminished in length; from its lower part forming like cords, proceeding to the point of the affected fingers — an endeavouring to extend the fingers.
I clearly perceived that the fascia became still more tense; here was a ray of light, and I suspected that the tense had something to do with the disease. And, it remained to discover the affected point! I cut through the prolongations which it gave off to the sides of the fingers, and the contraction ceased instantly; the fingers became nearly straight, and a very slight effort extended the Phalanges completely. The tendons remained entire, and the Space was not opened; all that had been done was removal of the skin and the portion of the prolongations of the fascia, which proceeded to the base of the Phalanges—had the view of leaving nothing in doubt and resolving all objections. I laid bare the tendons; they were of the natural size, and they were as pliable as usual, the surface being smooth. I then proceeded further; the articulations were in their normal state, the bones were neither enlarged nor uneven, nor did they show the least sign of alteration, either externally or internally. I could perceive no change in the inclination of the articulating surfaces, no alterations in the external ligaments, no Anaesthesia, neither had the Synovial Pleats, the Cartilages, nor the Synovia experienced any change. It was, therefore, natural to conclude that the origin of the affection was in the extreme tension of the fascia, and that this contraction itself resulted from injury of the fascia by the forcible and continued action of some hard body against the palm of the hand.
Desforges's account of the disease has been confirmed by others. J. W. Adam in his book figures two directions, one from the specimen in the Museum of King's College, London, and one from a specimen in St. Bartholomew's, London.

Desportes's figure in the white dress, also figures a direction.

All the specimens show that the disease chiefly depends upon a thickened and contracted condition of the palmar fascia.

**Diagnosis** — This is not difficult if the following points are considered:

1. The history of the case, showing the slow progress of the disease.
2. The thickened and puckered condition of the skin of the palm, especially when it is adherent to fascia beneath.
3. The flexion of one or more fingers, more particularly of ring finger alone or ring and little fingers together.
4. The bent finger cannot be straightened by the patient, on attempting to extend it, it causes pain, the fascia of palm stands out very prominent.
5. The presence of distinct thickened cord-like processes of fascia, passing along the palm to be inserted into the bone or tendon of the Malpighian of the fingers.
6. Frequently, the asymmetrical character of the disease.

If any one condition is present, it is the patient gives a hereditary history of the same deformity, if the father or
occupation likely to cause palmar irritation, the diagnosis will be almost certain, that the cause is Dupuytren's contracture of the palmar fascia.

Remembering the above facts it will be easy to differentiate it from:

1. Contracted finger(s) due to injury of a nerve or a neuron in palm of hand or in the arm. Here the particular fingers are deformed while receiving their nervous supply from the injured nerve - there will be some evidence of a wound in arm or wrist. The condition of skin of fingers is often glossy or shining - there are special bands, standing out in palm. No adhesion or thickening of skin.

2. Blue finger(s) are from discase of central nervous system - here will be other evidence of central nerve lesion. The Merritt Thumb - little finger will be atrophied. Probably some atrophy of muscle of forearm.

3. Hands deformed by Rheumatism or Rheumatoid Arthritis at first sight look like case of Dupuytren's contraction - but in these cases you are often able to extend the fingers with a little force, the metacarpophalangeal joints are frequently extended and there is other evidence of Rheumatism. Skin of palm is not thickened.

4. Necrosis of finger(s) from a wound of palm - there will be evidence of wound on a finger or in palm often it extends into the finger. There will be history of an accident.
5. There is another rather common deformity of the fingers likely to be confused with Dupuytren, and that is flexion of little finger. In examining my patients, especially women. I have frequently come across this deformity, one in two cases. I have seen it in men. Persons who are employed in knitting and some mill workers, more particularly. I have seen it in mill weavers who keep the little finger partly flexed and apart from the other fingers, it seems to lead to permanent flexion or contraction of the finger. The whole finger seems to be partly flexed although no distinct fascial band can be felt. Write in there any twitching of the skin. A similar deformity is congenital. I have seen three or four cases of this, one a man who lost little finger, curved, the patient declaring that they were born with it, and also gave a history by other members of the family having the same deformity.
Treatment.

In cases where there is no deformity of the fingers, no treatment is required, in fact the inconvenience of mere fanciful indentation and thickening is so slight that medical aid is not sought for.

In cases with deformity of the fingers, our object is to return the fingers to their normal position. To obtain this object, two principal methods have been followed, either by mechanical means or by operative treatment.

1. Mechanical Means. Considering the pathology of Charcot’s contracture, the tense and contracted condition of the palmar fascia, especially when the fingers are greatly deformed, it is difficult to understand how any treatment, short of an operation by means of the knife, can be of any permanent benefit to the patient. Nevertheless, several surgeons have recommended a decided form of an apparatus, to be worn by the patient, in slight degree of deformity; hoping that, by this means, the fingers might be restored to a condition of usefulness. Whatever form of apparatus is used, it must be cumbersome to the patient and almost limited to the well-to-do class of society. If the patient is to earn his living by manual labour, it is almost impossible to attempt to care the patient by this means. Should he be in a wealthy position, it may be tried, but at the best it must be a long and tedious process; for to be of any real benefit.
it must be worn day and night to co-act
up gradual mechanical extension.

Several forms of apparatus have been devised, each
furnishing the principle of gradual mechanical
extension. The most common form, is
a splint adapted to the side of hand and
attached to its ulnare, and back of fingers.

The deformed finger being brought into
contact with the splint by means of strips.

There are several opinions of different writers upon its subject:

1. Bichat says: "No machines for extension
with have any effect."

2. Erichsen says: "The treatment of digital
contraction is purely operative."

3. Dr. Little says: "In a tolerably advanced
cases, friction, manipulations twice or thrice daily,
the application of a screw-adjustment
splint or straight splint of wood, in an
sulph. benzene, will of mutably and powerfully
used, reduces the contraction and deformity."

But at the advanced age, at which many
patients present themselves for relief, the
employment of mechanical apparatus encounters
many difficulties:"

4. Bryant says: "By fixing the contracted finger on
a flexible splint and frequently stretching them,
much may be done and in several cases

Sellette Medecine de Paris 1835.

Thus effected a complete cure by these means.

Reeve, J. A. 1880. "Radical extension is carried out by means of light though effective machines, applied on the arm with the hand, and the force should be constant one - it is only applicable to slight cases."

W. Adams, 1880. "That gradual mechanical extension, by an apparatus worn night and day, would not long produce a cure of contraction, but complete and permanent, even cure it when slight, and not of long duration. It extending force should be light, applied and constant, not intermittent."

Dubois Remy, 1880. "Fused extension of the fingers by means of mechanical apparatus has not proved very successful, and one might suppose that the irritation produced in such extension might give rise to increased disease of the contracted fascia."

From the above accounts of the form of treatment, it is evident that the majority of writers do not put much faith in it. If we wish to benefit our patient we must resort to some other form of treatment and that must be operative.

In treating superficial contracture & operation, the aim has been to divide the fascial bands or bands with the knife, and afterwards to keep the fingers extended by some form of apparatus, until the wounds or wound have healed, and the finger restored to its normal position.

1 "Bodily deformities." J. A. Reeves, page 567.
To attain this object, two principal methods have been devised, one by open wound and the other by subcutaneous division of the contracted fascial bands. Dupuytren first operated by the open wound method, but this has been largely followed by other surgeons, consequently, many ways of performing it have been described. This method has been objected to by many, on account of the so-called severity of the operation, the risk of suppurative inflammation taking place, and subsequent reconstruction of the fingers and stiff finger. To meet these objections, many surgeons divide the contracted band by a subcutaneous method, there are one or two different ways of performing it. The open-wound method - Dupuytren first describes the various ways of operation by open wound in the first operation for this deformity as performed by this means, and then give the particulars of the operation performed in the cases under my care.

"Dupuytren performed his first operation on June 12th, 1831. He describes it as follows: "The patient's hand being firmly gripped, I began by making a transverse incision one third its extent opposite the metacarpal-phalangeal articulation of the ring finger, the incision first divided the skin, and afterward the palmar fascia with a cracking noise which was distinctly heard. When the incision was completed, the ring finger was..."

immediately liberated, and could be extended almost of itself as in a natural state. Wishing to expand the patient, I made an incision to extend the section of the fascia by splitting the fibrous transversely and deeply beneath the skin toward the palmar edge of the hand, in an attempt to disengage the little finger, but I did not succeed. I determined, in consequence, a fresh transverse incision opposite the articulation of the first and second phalanges of the little finger, and thus detached its extremity from the palm of the hand; but the remainder of the finger continued as before. Another incision then divided the skin and fascia opposite the corresponding metacarpal phalangeal articulation, which disengaged the finger in a slight degree, but the effect was incomplete — at last I made a third transverse incision opposite the middle of the first phalanx, and the finger was immediately set free, showing clearly that the last incision had included the point of insertion of the digital process of the fascia. Very little blood was lost. The wounds were dressed with dry lint and the two fingers kept extended by an appropriate instrument fixed on the back of the hand — the wounds were healed by 2d of July. The patient continued to wear the instrument for more than a month so as to prevent the approximation of the cut edges of the fascia, as they healed — when the instrument was removed, he was able to bend his fingers, and only felt a little stiffness from their having been kept so long in one position.
Boyarde's Method of operating is as follows: "I advise a longitudinal incision of the palm over each bridge previously stretched, thus to separate the lips of these incisions and detach from them the fibrous cords, and cut across these cords thus isolated. If the pre-digital bands send out prolongations to the first phalanges, before inserting themselves into the second, one should cut them above and below these prolongations. If section of these fibrous cords leaves places in the wound, they should be excised. The fingers should be afterwards fixed in a position of complete extension, and the incision covered by first intention."

Ricket's Method is similar to Boyarde's, in cases where the palmar band is thick and pronounced. Boyarde's single longitudinal incision is insufficient; so Ricket made a transverse incision at each end, and carefully directed the flaps formed, as far as necesary. The thin cut is excised; the band, the flaps are united, and the fingers fixed in extension.

1. Sir Williamfg. Ferguson's Mode of operating was as follows. To prevent the tendency to retraction, he recommends the offending part of superficial tissue be dissected out. An incision should be made longitudinally through the skin over the whole of the contracture, and if the integument..."

"Regette Medicale de Paris" 1885. Tome VII p. 1885.

be tolerably soft and thick, it should be turned off on each side, so as to expose the fibrous tissue, which should be carefully taken away. To effect this satisfactorily it is sometimes advisable to make one or more short incisions in the skin, for the tissue having been long contracted, does not stretch so readily as in a healthy state. I am in all of these operations. The utmost care should be taken to avoid the nerves and bloodvessels at the sides of the fingers, and if the stretching can be satisfactorily effected without offering a scratch or touching a tendon, it would be better, as then some movement might be expected afterwards. If of the tendons require division, the fingers must remain stiff, and in anticipation of a muscle event it will be well to consider what good can be expected from the proposed operation.

'Brunh's Operation' — Dr. Otto W. Brandelung describes the operation performed by Bussel of Bonn, as follows: A triangular flap of skin is cut out from the contracted palmar band, and the dividing all the bands of fascia which are exposed or can be reached. The base of the flap is in the groove which separates the flexed finger from the palm of the hand, and the apex is at the highest point of the band, which becomes prominent when the finger is put towards extension. The flap...
is dissected from apex to base, and it should
comprise as much subcutaneous cellular
tissue as possible - as one proceeds
with this dissection, numerous fibres of
communication between skin and aponeurosis
are cut, and the fingers can be a little
extended - The flap being reflected, constant
attempts at extension of the finger present
are made, and all resisting fibrous bands
must be divided. From without inwards,
with slight cuts of the limits. If one proceeds
thus, there is little fear of one injuring a
tendinous sheet, the finger now lies come
into extension, the skin flap, strongly
retracted, and its apex turns laterally inwards.
When the finger is fully extended, a portion
of the wound is left uncovered, & the
edges of the wound may be united, unless there
is risk of future tension - The finger is left
free for some days, but as soon as granulation
appears a cylinder of wood is placed in the
palm five or six days, and after this the finger
is extended, and kept so by means of a
straight splint applied to the back of the
hands. This should be removed daily, and
the finger moved, at the end of three or
four weeks, the band is left free. After
grafting may be used to hasten the healing of
the wound, but cicatrization is usually
accomplished in three or five weeks. Several
meaningful cases are recorded - Maroteling
has never seen the operation fail. He says
it is not painful, there is no fear of
suppurative inflammation, hemorrhage
symposis or tetanus - tendinos protracture, etc.
The following are the details of the operation—

The day previous to operation, the affected hand is well washed and brushed with 1-40 Carbolic lotion, and afterwards wrapped in lint soaked in the Carbolic lotion. The object of this is to render the parts thoroughly aseptic. If this is carefully attended to, the operator need not be undressed during the early part of the operation. An Anaesthetic having been administered, the arm is rendered Bloodless by means of Comare’s bandage. A Tourniquet is then applied over the Brachial artery. The hand is held in proper position by an assistant, the thumb resting upon a firm basis, with the fingers kept as wide apart as possible. A longitudinal incision is now commenced over the centre of the most prominent band of tense palmar fascia, this is the carried upwards towards the wrist and downwards towards the fingers to its last affected Palmar—The skin is carefully dissected off the fascia beneath, on each side of incision, for its whole length, but this is often difficult to do on account of the intimate connection of fascia and skin. The Subcutaneous fat having become absorbed, the two are intimately blended and each other along the most prominent part of fascial band and particularly at its Transverse Palmar fold—In dissecting the skin laterally small bundles of fascia will be met with passing from the abductor of palmar fascia, be inserted into the skin at various points, opposite point of insertion, this is rubbed and depressed, upon dividing the band.
The deperision in the skin at once disappears. Larger and often larger bands of Seneca (ern) are drawn over, injuring the second lateral, the relief to keep up its appurtenance for them. Their division, the fingers become a little straighter. The hand having been fully exposed and the freely separated from it, it is divided in the centre by a transverse incision--each part of the hand is now taken, and carefully followed to its attachment and then directed out completely, in going to smaller bones, will be seen passing from its under surface to be inserted into the sheath of the flexor tendons. At the insertion of the band into the finger, it will be noticed that it is inserted not only into the sheath of the flexor tendons, but into the peritoneum of the palmaris lateralis. The finger now generally comes down straight, unless there is some deformity of the phalangeal joints, or a neighbouring finger deformed. If the finger is deformed, it is treated in exactly the same manner--only the finger is in a condition of extreme flexion. Some care and patience is required in manipulating the knife on this will be danger of the vein being button-holed. The finger being well straightened, the forefinger is removed. Bleeding is often very smart and a few wrench will require ligature. The wound is now well wadded out with 1-20 Carotid Solution and cages of mercury brought into accurate opposition by means of silver wire. Catgut--Every antiseptic precaution must be taken. No drain is necessary of a week.
Adapted pad is applied over the line of incision. The fingers are now kept in a position of full extension and an anesthetic dressing of soothing wool applied, with a special band of linen band in a perfectly aseptic manner placed over the wound, to exert good elastic pressure. A splint is applied along the division of fingers and hand, the fingers being firmly bandaged to it, in a condition of full extension.

The dressings need not be removed for 7 or 8 days, when the wound will be found to be almost healed — it is better to leave the wound again antimpticchally and at end of fourteen days dressings may be removed. Passive Motion commenced. Future dressings removed at first a second dressing, let on stays 'till further irritation is better to leave them as long as possible.

In dressing out the dorsal fascia, great care must be taken of the digital nerves, as they will be divided as I have seen done once or twice — they are easily recognized as they are just on the stretch.

Should both hands be affected, it is better to operate upon them at different times — to regard dressing the wound in a position of full extension, it is better to use this at time of operation than at second dressing. If it is applied just in a perpendicular position, adhesions will soon form and in attempting to bring the fingers into a straight position afterwards, these adhesions will be broken down, effusion of fluid will take place.
and to cause some cicatricial contraction of deeper structures and preventing free movement of the finger. The equal pressure of the pad on the palm, over the lines of incisions, prevents too much effusion of serum, consequently no drain is required, and the wound stands a better chance of healing by first intention.

Movement of fingers should not be commenced for 10 to 14 days after the operation. It is better for the surgeon to do this himself at first, using gentle passive motion of fingers with free massage, particularly of the joints, as they are liable to become very stiff on account of being kept in one position for long. The movement of fingers must be gentle and passive, most be performed with a combined and well-applied massage. If not moved early it is continued, the cicatrix is liable to become hard and tense and a tendency to contract, so preventing full use of the fingers. If the skin is much hypertrophied, or it often is, the cicatrix is liable to be very thick and this must be guarded against as soon as possible. In order to obtain a good result after this often wound operation particular attention must be paid to juncture.

Movement and massage. The effort should be even at first for some time after the operation. So as to keep fingers at full extension. The hand in a state of rest is in a position of prrmasia. It allowed to remain in this position frequently and for long, the cicatrix is liable to become adherent to the finger and not to straighten; it remains would have been.

I have now described all the known methods of
operating by the "open-wound".

Considering the various methods in detail, I think the one superior to all is Hardie's - it includes all the principles of popular methods, but it has the very great advantage of dissecting out completely the diseased fascia. Have had under my care about 12 cases operated upon by this particular method, all reports are good. The cases have been excellent - Dr. Hardie has published some good results in the Medical Chronicle, October 1884.

Before discussing the advantages of the open-wound method of operating, I will describe the second method, namely the subcutaneous division of the fascial bands.

The first approach to the purely subcutaneous method is an operation described by Sir Arthur Cooper. "When the ischioreus is the cause of the constriction, and the contracted band is narrow, it may with advantage be divided by a pointed bistoury, introduced through a very small wound in the integument. The finger is then extended and a splint applied to preserve it in a straight position."

2. Jules Guerin first operated upon Dupuytren's Contracture by the pure subcutaneous method, but he seems to have divided tendons as well as fascia, though the movement of the fingers was well maintained.

Dr. W. Ferguson also describes a subcutaneous method for operating. "A narrow knife should be pushed under the plane in front of the contraction..."
and then carried through the most prominent band, whether that be merely the aponeurotic, condensed cellular tissue, or tenons, and thereafter the fingers should be gradually extended as a splint by means of bandages.

The operation, described by W. W. Adams, is the one most commonly performed now by those surgeons who prefer the Subcutaneous Method. He makes multiple transverse subcutaneous bands in time, which are immediate extensor by bandaging the hand to a splint.

He describes it as follows:

I commenced the practice of making multiple subcutaneous division of the fascia, and its digital prolongations, introducing the MacIntyre tenotomy knife, and carrying it between the skin and the contracted hand, which I then divide by cutting downwards very slowly and cautiously, taking care not to cut the joints or divide any structures, except the contracted band of fascia. I make the first incision at the greatest distance from the finger, on the palm of the hand, between the transverse crease and the palm of the hand. The second incision should divide the same structure as the first, but as near to the finger as possible, between the transverse crease and the web of the fingers. The third and fourth incisions divide the lateral bands in the digital prolongations of the palmar fascia, which pass from the central cord in the palm to the adjacent sides of the fingers. There must be

"Medical Surgery" by Dr. W. Ferguson, page 259.
Made very carefully in order to avoid cutting the vessels and nerves along the sides of the fingers. The incision should be made at the bifurcation of the extensor web between the fingers, and the incision directed obliquely upwards and outwards towards the palm of the hand. These incisions will divide the strongest and most prominent bands which produce flexion of the first phalanx of the finger upon the hand, and if care be taken to avoid chopping the front of the knives, there will be no fear of woundning vessels, or nerves. Sometimes, lateral bands of contracted fasciculi require to be divided opposite the centre of the first phalanx, and this must be done by incision at the edge of the contracted bands, the knife being directed transversely towards the bone, but this cut must be made very carefully to avoid the artery and nerve. Occasionally, a lateral band may have to be divided between the first and second phalanx or on one or either side at a joint corresponding to its articulation and this must be done carefully. As the fasciculi lumps in being withdrawn from each puncture, the surgeon should make pressure with the forefinger of the left hand on the spot at which the fasciculi has been divided and the palatine veins, through which the knife has passed. A pledge of lint should be immediately applied over each puncture and retained in position by strips of plaster. By this means haemorrhage is arrested, and the true palatine veins character of the operation preserved. After the requisite number of punctures have been made and thus protected by additional compress
of lint should be applied, and the hand bandaged just the fingers in an extended position quite straight, if they can be brought so, to a softly padded metal splint.

The after treatment – the first dressing of lint and plaster should be allowed to remain undisturbed until the fourth day, by which time the fractures will be found to have healed. The padded splint must be worn continuously day and night for four days. The retentive metal splint to be reapplied and the hand and fingers bandaged to it. Extension to be kept up by the splint worn continuously for day and night for 4 weeks, but the splint and bandage alike changed every two or three days. After this, the extension splint to be worn only at night only, in an additional three or four weeks, full motion encouraged every day.

The above are the principles of performing the subcutaneous operation. I may say it may be easily performed, but in other cases I have observed, where the deformity is very marked, it would be almost impossible to divide the bands subcutaneously as the adherence between the skin and fascia is so intimate, the knife could not be readily introdanced between them. I know it is argued that the adherence does not take place along the whole hand, that is true in some cases, but in other cases it is not. In my opinion, it is impossible to divide the tissues so intimately blended for so long a distance, that it in sufficient case how the instantaneous hard could become partially absorbed. The upholder of the subcutaneous method say that after division of the tinen fascial bands, they
Become absorbed or atrophy – that maybe so
but it must take a very long time for the
thick fascia to disappear. I have seen it very
thick and diffusing down deep into the flesh.
It is also said that the operation is more
simple, it can be repeated and that there is
no danger of suppurative inflammation.

In favor of the open wound method I maintain that
1st. It is applicable to all cases, whether the
deformity be marked or very slight.
2nd. The second time is removed once for
precisely,
3rd. With the Antiseptic treatment there is little or
no danger of Sphyrmatinae inflammation.

4. Recovery is rapid, the patient from regaining
the use of their fingers, being able to fulfill
their employment.

5. He, once necessary to wear a splint, during the
day after the wound is healed.
It may be a more severe operation, but that is
not worst considering as an Anesthetic is
used and every Antiseptic precaution taken.
The case had been treated by the method
and all done well – the wound has healed
and it continues. Recovery has been rapid.

I would only be disposed to follow the Muffelation.
Method in some cases where the skin is
thin and appears to be atrophied. Hypertroch
in its length.
But in the majority of cases, I think the open wound
Method the best and the one I have described.
fully as practiced in this German, in certain all one who preferred and Princess to mod advantages.
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