

ON THE TREATMENT OF DUPUYTREN'S CONTRACTURE

By

LENNART SÖDERBERG

INTRODUCTION

Since *Cooper* in 1822 began to treat Dupuytren's contracture surgically, numerous different methods of operation have been proposed for this complaint. However, for a long time the results were so poor, that many surgeons did not consider operation worth-while. Nevertheless the development of surgical technique during the last decades has also given rise to new possibilities of treatment for these affections; particularly since the introduction of the so-called atraumatic technique in hand-surgery (*Bunnell*).

Certain guiding lines which agree in principle with some of those applied in modern hand-surgery had however already been indicated.

At the beginning of this century *Lexer* (who published his results 1931) began to perform a routine total resection of the aponeurosis regardless of the stage of development of the affection. He points out that the risk of recurrence or the appearance of similar changes in other parts of the palm is considerably diminished by this operation.

The most extensive record of later examinations of cases operated upon according to this principle has been published by *Meyerding* (1936, 1940).

In Scandinavia, during recent years, *Einarsson* (1946), *von Stapel-mohr* (1947) and *Skoog* (1948) have given an account of the operative technique and the results of 62, 28 and 69 operated cases respectively. *Einarsson* and *von Stapelmohr* recommend that at least the aponeurosis corresponding to the 3rd-5th fingers should be resected, and in the majority of cases they have carried out a total resection. As the first and second fingers are rarely affected by Dupuytren's contracture, the smaller resection should be adequate. In *Skoog's* material a total aponeurosectomy has been carried out in all cases.

The incision in the palm varies: In most cases *Meyerding* uses a z-shaped incision, *Einarsson* a longitudinal bayonet incision, *von Stapelmohr* a cruciate incision and in all cases *Skoog* uses a transverse incision in the distal palmar crease. All consider that a straight longitudinal incision in the palm is unsuitable on account of its tendency to scar- tension and renewed contracture of the operated finger.

When there are changes in the aponeurosis on the proximal phalanx, this has been excised through an incision made in one of three ways: longitudinally on the antero-lateral surface, transversally or in the shape of z on the palmar aspect. This is done because a mid-line incision is often followed by a contraction-forming scar.

After operation, *Skoog* places the fingers in a slightly flexed position in a soft bandage. Exercise of the finger-joints is begun after a few days, and after two weeks a palmar splint with the 2nd-5th fingers in extension is used during "the main part of the 24 hours" and physiotherapy is commenced.

Meyerding, *Einarsson* and *von Stapelmohr* recommend that the fingers be splinted in an extended or nearly extended position for seven-ten-fourteen days after which the movement therapy is initiated.

All of the above writers are in favour of general or brachial plexus anaesthesia and the operation is performed in a bloodless field through the use of a tourniquet.

The following gives an account of 45 cases which were operated upon in the Orthopaedic Clinic in Malmö during the period 1940-48 and further examined in the autumn of 1949. These were not operated upon quite according to the above principles. Although the latter may be considered correct and worth following I thought it would be interesting to make an analysis of our results which seem to have been rather good. Perhaps an explanation may be found in the undoubted fact that a method which in the hand of one operator gives a good result, in the hand of the other may give an inferior one, and vice versa. This depends upon the degree of familiarity with the method applied, on general technical ability, conscientiousness and care in aftertreatment etc. Perhaps this is especially true where reconstructive surgery is concerned and, so too, in the treatment of Dupuytren's contracture.

M A T E R I A L

My material consists of 37 men and 3 women. Of these, 5 have been operated upon on both sides.

The distribution according to age is apparent from the following:

TABLE 1

< 35 years	=	3 cases
40-49	„	= 11 „
50-59	„	= 21 „
60-69	„	= 9 „
> 70	„	= 1 case

With regard to occupation, 22 were manual workers while the rest were intellectuals. 12 of the patients had parents or siblings suffering from the same disease. In 4 cases it was stated that the illness had developed in conjunction with trauma. Bilateral localisation was found in 25 cases, the right hand alone in 11 and the left alone in 4 cases.

Changes on the fingers known as “knuckle-pads”, which are often said to appear in association with Dupuytren’s contracture, were observed in 5 cases. Finally, it may be mentioned that nodules on the plantar aponeurosis were observed in 3 cases.

The right side was operated on in 24 cases, the left in 11 cases and both in 5 cases. When bilateral changes were found, the worse hand of the two was operated on first.

35 of the cases were operated upon by S. von Rosen, the remainder by the resident surgeons.

All patients, with one exception, were operated upon as out-patients.

T R E A T M E N T

The day before operation the hand was cleansed with benzine, ether and alcohol, after which an alcohol dressing was applied and was not removed until operation. In all cases, this was carried out under local anaesthesia with 1% etocain solution with adrenalin added. Esmarch’s bandage was not used.

The incision used was longitudinal and laid directly over the contracting fibrous band from its commencement proximally in the palm and out to the flexed finger. Since in several cases, especially the more advanced, the altered tissues extended as far as the proximal phalanx and even here were sometimes associated with pronounced nodular changes in the skin, the incision was made along the mid-line of the proximal phalanx up to the first interphalangeal cleft. The skin and

subcutaneous areolar tissue were cut away from the underlying layers on both sides. Of course, where nodular changes were found, involving the skin, the dissection had to be made immediately up to or in the deep layer of corium, external to fat and aponeurotic fibres. All aponeurosis, which was visibly and palpably changed, was removed. Where the affection involved two or more fingers, in some cases one

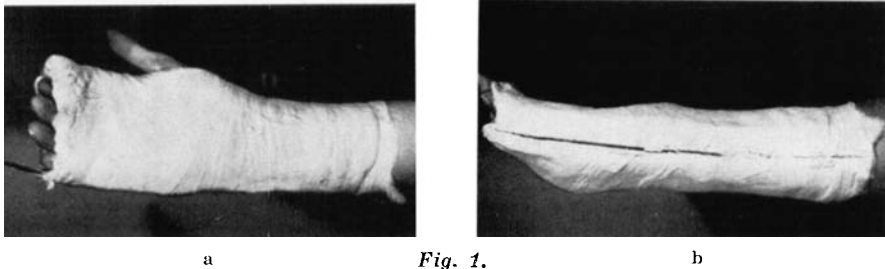


Fig. 1.
The plaster cast employed from the palmar aspect with a thin metal splint on the ulnar aspect over which the plaster is cut (a). Photograph taken from the ulnar aspect after the plaster has been cut and the splint removed (b).

or two additional longitudinal incisions were made; consequently an almost total resection of the aponeurosis was carried out. Of course, this is not possible from a single incision nor has it been attempted. Much attention was paid to vessels and nerves. After careful hemostasis the wound was closed by fine sutures. Generally there was no difficulty in obtaining complete extension of the fingers, for tension in the suture line is usually absent on account of the longitudinal direction of the incision. When the fingers are extended, the loose dissected skin will lie closely against the underlying layer, of itself, and it is not necessary to use a compression bandage either to promote adhesion of the skin to the underlying layer, or as a prophylaxis against anticipated secondary haematoma formation.

A padded, well moulded circular plaster cast, cut open on one side, was applied so that the 2nd-5th fingers were extended and the wrist was in a slight dorsi-flexed position.

A week after the operation, the plaster was carefully prised open and the wound inspected. Minor necrosis in the skin edges occurred in only two cases and in one case a haematoma, which could easily be expelled through the wound. Therefore, judging from my cases, it seems that neither detrimental conditions to healing nor increased risk of secondary haemorrhage should be present owing to the use of local anaesthesia. Not a single case of infection occurred.

The plaster was replaced and the patient reported again after the lapse of another week, when the sutures were removed. The patient now used his plaster only during the night for 2-3 weeks. He was allowed to use his hand and was instructed in exercise of the finger joints. These exercises were carried out as a rule in a warm hand-bath at least twice daily. The majority of cases have also had physiotherapy every other day, which was as a rule continued until the patient was completely fit for work.

In 7 cases complete fitness for work was effected within 6 weeks and in 28 cases within 12 weeks after operation. The remaining 10 cases took one month or more after this with a maximum (in one case) of one year after operation.

Finally, I shall mention yet another procedure, which, perhaps, has contributed to the satisfying result, i.e. post-operative x-ray treatment.

X-ray or radium radiation as the sole treatment has formerly been tried by *Salomon* (1925) among others, and he reported that 5 out of 10 cases treated by x-rays showed improvement. The result was considered especially satisfying in less severe cases. *Feuerstein* (1936) recommends surgical treatment followed by x-ray radiation in order to prevent keloid formation but does not give any proposals as to how this treatment should be carried out nor does he give any account of subsequent examinations. *Skoog* gives an account of one case operated upon again, where post-operative x-ray treatment was given on the scar and on an adjacent area which displayed two subcutaneous nodules, exactly similar to those preceding the deformity. The nodules regressed gradually and had completely disappeared 9-12 months after the treatment. Three years later they had not reappeared. The x-ray doses are not stated.

All my cases, with 5 exceptions, were given x-ray treatment 2-4 weeks after operation. The dose varied between 700 and 800 r and was given in intervals of 3-5 days over a period of 2-3 weeks. The daily dose varied between 175-215 r. The type of ray used was 165-175 kV and 6-7 mA. Filter 4 Al. Distance 40 cm.

The dose given represents a resorption treatment and has aimed at diminishing the formation of scar-contracting fibrous elements in the skin and subcutaneous tissue. As a preventive measure against secondary keloid formation in the epidermis the doses are probably inadequate.

TIME OF RE-EXAMINATION
AND CLASSIFICATION OF MATERIAL

The time which elapsed between operation and re-examination will appear from the following table:

TABLE 2

6-12 months	=	3	cases
> 1 year	=	3	„
> 2 years	=	8	„
> 3 „	=	11	„
> 4 „	=	6	„
5- 8 „	=	14	„

The material will be classified according to a system used by the four authors mentioned in the beginning of this report, and which was proposed by *Meyerding* and modified in certain details by *Einarsson*. According to this, the cases are placed in the following groups:

- Grade 0. Nodules in the palmar aponeurosis, occasionally infiltrating the skin.
- Grade 1. Additional major or minor flexion deformity of one finger only.
- Grade 2. Flexion deformity of more than one finger, nowhere attaining 60°.
- Grade 3. Flexion deformity of more than one finger, exceeding 60° in at least one joint.
- Grade 4. Major or minor flexion deformity of all fingers.

RESULTS

The writer's material is grouped according to *Meyerding-Einarsson* and the operative results were as follows:

TABLE 3

Grade	Number of cases	Excellent	Fair	Poor
0	3	1	2	—
1	25	17	7	1
2	1	—	—	1
3	16	7	8	1
4	—	—	—	—
Total	45	25	17	3
%		55,6	37,8	6,6

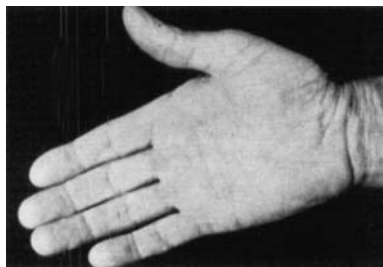
25 cases, i.e. 55,6%, were classed as excellent. This term denotes that there is perfect function of the fingers or, in other words,

complete ability to flex and extend the fingers; in addition a fine, supple scar and no disturbances in sensation. To this group, however, 4 cases have been added with an insignificant defect of extension in the middle joint of the little finger but apart from that, perfect function. In 3 cases this extension defect was of a maximum of 20° and in the fourth 35° . In this last case the finger could not be extended more fully upon operation on account of articular or peri-articular hindrances.

The time which elapsed between the operation and later examination deserves especial notice with regard to this group:

TABLE 4			
6-12 months	=	2	cases
> 1 year	=	2	"
> 2 years	=	5	"
> 3 "	=	7	"
4- 7 "	=	9	"

Thus no less than 21 of these cases were observed over a period of more than two years!



a



b



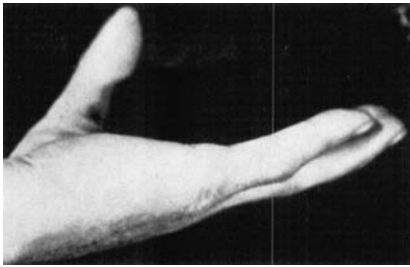
c

Fig. 2.

Case V.E., former station porter. Gr. 1. Age 66 at time of operation. Completely recovered and fit for work 6 weeks later. Condition 4 years after the operation: Thin even scar. Excellent function.



a



b



c

Fig. 3.

Case N.A., labourer. Gr. 3. Age 64 at time of operation. Two incisions. Recovered and fit for work 2 months later. Condition 3 years after operation: At the proximal crease of little finger there is a negligible thickening of the scar. Apart from that, even scars. Excellent function.

At the time of operation 6 of the cases were under 50 years, the remaining 19 over 50 years.

Four cases in this group have not had post-operative x-ray treatment.

The results of two of these cases are shown above (Figs. 2 and 3):

The results were fair in 17 cases, i.e. in 37.8%. This term denotes that a considerable improvement has been obtained with satisfactory function but that certain maladjustments still persist or have recurred, generally in the form of limitation of movement or new changes in another part of the palm. It may then be open to discussion if such a recurrence can be classified as a fair result at all, but the evaluation here has been made with regard to the fact that compared with the original condition an improvement has occurred and that the patient has declared himself satisfied with the result.

All received post-operative x-ray treatment.

Of these cases, 5 were at the time of the operation under 50 years of age and the remaining 12 over. Two of the 5 former and 5 of the 2 latter cases showed more or less recurrences.

Three cases, i.e. 6.6% were p o o r, i.e. presented no improvement or were worse than before operation.

The grade 1 case received no post-operative x-ray treatment.

All of the three poor cases, who each had recurrences, were under 50 years of age and 2 of them were the youngest of all my cases.

A short account of these 20 cases is given here:

Fair:

Grade 0. 2 cases.

N.K. 35 years¹, warehouse labourer. Multiple nodules in the palm and tight bands corresponding to 3rd and 4th fingers. Op. 1947. Present condition: Tight band 5th finger. No contraction.—Recurrence in remaining part of the aponeurosis.

W.A. 43 years, stoker. Nodules in the palm and tight band 3rd finger. Op. 1948. Present condition: The operation scar somewhat reddened. Tender on pressure, which interferes with his work. No contracture.

Grade 1. 7 cases.

K.G. 45 years, smith. Thick bands to 3rd and 4th fingers. Op. 1945. Present condition: Full mobility in 3rd and 4th fingers but has recently developed a tight cord 5th finger, which is maintained in 70° flexion at the first inter-phalangeal joint.—Recurrence in remaining part of the aponeurosis.

E.K. 55 years, commercial traveller. Primary chronic polyarthritis since 1939. All fingers slightly flexed and ulnar-deviated in the metacarpo-phalangeal joints. They could be passively extended all excepting the 4th finger, which was held by a tight band. Op. 1946. Present condition: 4th finger can be extended much better than before but is somewhat hindered by the slightly contracted skin scar, which is, however, otherwise supple and smooth.

O.S. 56 years, postman. Op. 1930 for contracture of 1st and 5th fingers of the left hand. Recurrence 5th finger. Op. 1942. Present condition: 30° flexion in the metacarpo-phalangeal joint 4th finger, on account of nodules on the proximal phalanx 4th finger. An insignificant flexion deformity of 5th finger associated with this. The skin scar is somewhat broad but supple. No additional changes in the palm.

H.A. 57 years, slaughterer. 4th finger completely flexed towards the palm. Op. 1941. Present condition: Full mobility in 4th finger but nodules and band formation corresponding to 3rd finger, which has 10° flexion deformity in the metacarpo-phalangeal joint.—Recurrence in remaining part of the aponeurosis. (This occurred 4 years after the operation but has since then remained stationary).

K.O. 58 years, tram-conductor. Primary chronic polyarthritis 1928. Fingers since then somewhat crooked and stiff bilaterally. Thickened band 5th finger, which lay against the palm. Op. 1945. Present condition: 5th finger ankylosed in 90° flexion in the first inter-phalangeal joint. Unsatisfactory clenching of both hands, more so on the operated hand. The scar supple and smooth. No recurrence. Having regard to this, the case has been classified as fair; the limited mobility is accounted for by this patient's chronic joint condition.

O.S. 59 years, postman. Op. 1934 for contracture of 4th and 5th fingers of the

¹ Indicates the age at operation.

right hand. No recurrence from these but gradual contracture of 3rd finger. Op. 1945. Present condition: The scar of 3rd finger slightly tight. 20° extension defect in the metacarpo-phalangeal joint. The other two scars are supple and fine.

K.J. 62 years, housewife. Flexion deformity 4th finger. Op. 1948. Present condition: Fine scar. Good mobility but nodules and bands corresponding to 3rd finger, which has 30° flexion deformity in the proximal inter-phalangeal joint.—Recurrence in remaining part of the aponeurosis.

Grade 3. 8 cases.

G.L. 43 years, seaman. Op. 1944. Two incisions corresponding to 2nd and 5th fingers. Insignificant necroses in the skin edges. From the start, extraordinarily stiff in the finger joints. Received prolonged physiotherapy. Present condition: The scars fine, supple. No recurrence. Extension complete but poor clenching of the hand.

O.K. 46 years, car salesman. Op. 1946. Two incisions corresponding 3rd and 5th fingers. Present condition: Scars satisfactory. Complete extension. Restricted movement in the outer joints and, on account of this, somewhat incomplete clenching of the hand. Slight deterioration of sensation of the whole ulnar aspect of the 5th finger.

E.T. 51 years, labourer in customs storehouse. Op. 1947. Three incisions corresponding 3rd, 4th and 5th fingers. Present condition: Recurrence corresponding to 5th finger with 40° flexion deformity in the proximal interphalangeal joint. Nodule adjacent to the scar on 3rd finger. Complete hand clenching. Since operation the patient complains of cold in the affected hand.

O.A. 54 years, street sweeper. 3rd-5th fingers flexion deformity. Op. 1944. One incision corresponding to 4th finger. From the beginning considerable stiffness of the fingers, which appeared to progress as a result of x-ray treatment; this was discontinued after two sessions. Present condition: Complete extension but incomplete clenching of the hand; in maximal clenching of the hand the finger tips of the 2nd-5th fingers are 1-2 cm distant from the palm.

F.L. 59 years, postman. Op. 1941. Two incisions corresponding to 3rd and 5th fingers. Present condition: Band and nodules corresponding to 4th finger and thick nodule on the proximal phalanx of 5th finger. Insignificant extension defect in the metacarpophalangeal joint and in the proximal interphalangeal joint 3rd-5th fingers. Flexion complete.—Recurrence in the remaining part of the aponeurosis.

F.W. 64 years, grocer. Op. 1920 for contracture 2nd and 3rd fingers. Two incisions. No recurrences from these. Op. 1944. 4th finger 45° flexion deformity in proximal inter-phalangeal joint. 5th finger lay against the palm and was ankylosed in the proximal inter-phalangeal joint and disarticulated. Present condition: Slightly tight but thin, fine scars in the palm. Thickened, hard scars on the proximal phalanges. 2nd-5th fingers about 15° flexion deformity in the proximal inter-phalangeal joints.

O.F. 66 years, housewife. 4th and 5th fingers lay against the palm. Op. 1944. Defaulted from physiotherapy at an early stage. Present condition: 60° flexion deformity in the first inter-phalangeal joints 3rd-5th fingers. Complete clenching of the hand with exception of 4th finger, where the finger tip is 1 cm from the palm.

H.S. 73 years, farmer. Op. 1944. Two incisions corresponding to 3rd and 5th fingers. Present condition: 3rd finger satisfactory. Recurrence corresponding to

5th finger with 30° flexion deformity in first inter-phalangeal joint and nodule on the proximal phalanx. Complete clenching of the hand.

Poor:

Grade 1.

T.J. 26 years, station porter. Injured 5th finger by wounding, 1936, after which the finger became crooked Op. 1945. Recurrence within half a year after op. Present condition: The tip of the little finger flexed on palm, diminished sensitivity ulnar aspect 5th finger. Nodules corresponding to 3rd-5th fingers.

Grade 2.

T.K. 28 years, lorry-driver. Trauma 4th finger 1935. Since then contracture 3rd-5th fingers. Op. 1947. Three incisions corresponding 3rd-5th fingers. Complete recovery two months after the operation. Three months later deformity occurred. Present condition: Same deformity as before operation, primarily on account of hard, thickened, tight scars on the proximal phalanges. Tenderness on pressure over the scar on the proximal phalanx 4th finger. On this account, has changed his work and is now a taxi driver.

Grade 3.

H.A. 46 years, tradesman. Op. half a year previously in his local hospital for contracture of 5th finger. Soon local recurrence and in addition slight deformity of 3rd-4th fingers. Op. 1946. Two incisions. Short lasting physiotherapy in his local hospital. Recurrence some months later. Present condition: Same deformity as before op. of 2nd-5th fingers and in addition ankylosis in 90° flexion of the proximal interphalangeal joint of 5th finger. Diminished sensitivity 5th finger. The scars supple, fine. No new nodule formation.

A summary of the imperfect results, which are demonstrated in the 20 above cases, indicates the following:

Recurrence has occurred in the operated finger in 4 cases and in the remaining part of the aponeurosis, causing contracture of another finger in 6 cases. In one of the last mentioned cases only an insignificant nodule was observed on one of the proximal phalanges, yet this produced a flexion deformity.

Where recurrence occurred in the operated finger it appeared shortly (2-6 months) after the operation, while those changes, which appeared in the remaining parts of the aponeurosis, as a rule appeared considerably later, in one of the cases not until 7 years after the operation. With regard to the time for the appearance of the recurrences these observations agree with those made by *Skoog*.

In 3 cases, the longitudinal scars in the palm have been somewhat tight. In one case tenderness upon pressure which caused discomfort at work was reported. Where the incision had been made over the proximal phalanx too, this part of the scar often showed a certain induration as compared with that on the palm, especially in the group

of manual workers. In 2 cases this induration was combined with a secondary contracture of the scar, which caused a flexion deformity in the finger joints.

Disturbances of sensitivity, which have arisen in conjunction with the operation and which had no tendency to diminish, were complained of and were verified in 3 cases, all on the 5th finger.

Finally, one patient complained that he often felt cold in the operated hand; this had not been the case formerly. At the time of investigation no difference in the temperature of the hands could be demonstrated by palpation.

RESULTS COMPARED WITH OTHER AUTHORS'

The results of the operations by the writers previously mentioned are compared with those of my own investigation in the following table:

TABLE 5

		Hands re-examined	Excellent Number per cent		Fair Number per cent		Poor Number per cent	
Meyerding	1936	74	55	74	11	15	8	11
Einarsson	1946	62	43	69	7	11	12	20
v. Stapelmohr	1947	28	18	64	8	29	2	7
Skoog	1948	69	57	83	12	17	—	—
The writer's material		45	25	55	17	38	3	7

As *Meyerding* and *Einarsson* have not accounted for their cases in this way, a comparison of the results, taking into consideration the status of the hand before the operation, can only be made with *v. Stapelmohr's* and *Skoog's* material. The 28 cases of the former all belonged to grade 1 and 2 and so were less advanced cases. Of the latter's 69 cases more than half (38) belonged to grade 3 and 4. *Skoog's* results are beyond comparison the best, above all concerning the advanced cases in his material. Bearing in mind the appearance of the recurrence it ought perhaps to be mentioned that 41 of his cases have, however, been under observation for less than two years. It may, however, be possible to consider this time of observation as sufficient in view of the fact that none of his remaining cases, which have been observed over a long period, have shown any recurrences.

Einarsson mentions 10 recurrences. Three of them show an "initial stage of slight recurrence" without deformity of any finger and are numbered among the fair results; the other 7 showing more pronounced recurrence are considered poor. One should, of course, assume

that the total excision of the aponeurosis constituted the radical procedure which guarantees freedom from recurrence but judging by *Einarsson's* cases this is apparently not so. Another possibility, of course, is that in these cases of recurrence, smaller parts of the aponeurosis have avoided the eye of the surgeon and been left behind despite the title of the operation.

CONCLUSION

The general conclusions to be drawn from my investigations seem to be the following:

The operative technique and after-treatment applied have given an excellent result in 55.6% and a fair result in 37.8%, in other words a satisfactory result in 93.4%.

The partial excision of the aponeurosis, which has been carried out, has, however, proved inadequate in some of the cases. When the patient's age is taken into consideration, our results seem inferior in the younger patients; the number of recurrences is relatively larger in the age group under 50 years. This seems to imply that our operations, especially in these cases, have not been sufficiently radical. For when Dupuytren's contracture occurs in younger patients, the spread of the disease in the palm generally increases although often slowly perhaps. Practically always, however, incapacity of the hand gradually results. Therefore, it seems to me correct that a total excision of the aponeurosis as a prophylactic measure should always be striven for in these cases. On the other hand it is debatable, whether this is always necessary or even appropriate in older age groups. When the affection occurs after 50 years of age, the extension is usually very slow, and may also come to a standstill in many cases, after having reached a certain stage of development. First of all, one ought to make thorough inquiries whether the complaint is progressive. If it is reported in a case of contracture that the condition at a certain stage of development seems to have arrested itself I consider it quite justified to excise only the tight fibrous band. If only changes in the palm are present without contracture of the fingers, it is questionable if operation in higher age groups is at all advisable. A total excision of the aponeurosis seems to me to be an unnecessarily extensive operation for these cases.

As regards a longitudinal incision in the palm no inconvenience afterwards has been demonstrated in my investigation, even if some of the scars have not been quite perfect as to physical appearance. On the other hand, and contrary to these findings, longitudinal inci-

sions in the mid-line of the proximal phalanx may result in secondary induration and contracture of the scar and ought therefore to be avoided.

The use of local anaesthesia has not produced any untoward results in the form of post-operative haematomata or impaired healing, but it precludes the use of a tourniquet and therefore the possibility of operating in an absolutely bloodless field. An advantage has been that the patients could be treated as out-patients.

The post-operative physiotherapy is exceedingly important in order to secure a good final result. Exercises in a warm hand bath are here valuable.

It seems that x-ray treatment after the operation may be of value in aiding the resorption of fibrous elements in the skin and subcutaneous tissue thus counteracting the formation of scar tissue.

S U M M A R Y

The writer reports upon operation technique and after-treatment of 45 cases of Dupuytren's contracture. The incision used has been a longitudinal incision in the palm and the mid-line of the proximal phalanx. Total excision of the aponeurosis has not been performed as a rule. Post-operative x-ray treatment has been given in doses intended to induce resorption. An account of the cases classified as excellent, fair and poor is given.

The excision of the aponeurosis has proved to be inadequate in some of the cases. Longitudinal scars in the palm have not influenced the results unfavourably but in some cases the longitudinal incision in the mid-line of the proximal phalanx has resulted in scars, forming contracture.

The results are compared with those of four other writers, who have made use of other incisions and carried out a total resection of the aponeurosis in all cases.

The problem of partial or total resection of the aponeurosis has been discussed with regard to the different age groups. The writer has come to the conclusion that in older age-groups regard must always be paid as to whether the affection is progressing or not; that in the latter case, a total resection of the aponeurosis should not be necessary to obtain a good functional result. In the case of younger individuals, however, the operation ought to be as radical as possible (total excision of the aponeurosis).

The investigation shows that an *excellent* result is obtained in 55.6%, a *fair* result in 37.8%; in other words, a satisfactory result in 93.4% of the cases.

RESUME

L'auteur rapporte la technique d'opération et de traitement complémentaire de 45 cas de contracture de Dupuytren. On a pratiqué une incision longitudinale dans la paume et dans la ligne médiane de la phalange proximale. En règle générale, on n'a pas pratiqué l'excision totale de l'aponévrose. Un traitement post-opératoire aux rayons X a été donné pour accélérer résorption. Sur un tableau, les cas ont été classés d'après les résultats obtenus : excellents, bons et médiocres.

L'excision de l'aponévrose s'est montrée peu heureuse dans certains cas. Les cicatrices longitudinales de la paume n'ont pas eu une influence défavorable sur les résultats, mais dans certains cas l'incision longitudinale de la ligne médiane de la phalange proximale a provoqué des cicatrices formant contracture.

Les résultats sont comparés à ceux d'autres auteurs qui ont pratiqué d'autres incisions et qui ont procédé dans tous les cas à une résection totale de l'aponévrose.

Le problème de la résection totale ou partielle de l'aponévrose a été discuté en ce qui concerne les différents groupes d'âges. L'auteur a conclu que dans les groupes les plus avancés, il faut toujours voir si l'affection est progressive ou non ; dans ce dernier cas une résection totale de l'aponévrose ne devrait pas être nécessaire pour obtenir un bon résultat de fonctionnement. Dans le cas d'individus plus jeunes, l'opération doit être aussi radicale que possible (excision totale de l'aponévrose).

Cette enquête montre qu'un *excellent* résultat a été obtenu dans 55,6% des cas, un *bon* résultat dans 37,8% ; en d'autres mots, des résultats satisfaisants ont été obtenus dans 93,4% des cas.

ZUSAMMENFASSUNG

Der Verfasser berichtet über Operationstechnik und Nachbehandlung in 45 Fällen von Dupuytren's Kontraktur. Er verwendet eine Längsinzision in der Handfläche und eine Mittellienien-Inzision über der proximalen Phalanx. Vollständige Exzision der Aponeurose wurde

im allgemeinen nicht vorgenommen. Postoperative Röntgenbehandlung wurde verabreicht in Dosen, die die Resorption befördern sollten. Ein Bericht über die Fälle, die als ausgezeichnet, gut und unbefriedigend bezeichnet werden, wird gegeben.

Die Exzision der Aponeurose hat sich in einigen Fällen als unzulänglich erwiesen. Längsgerichtete Narben in der Handfläche haben die Resultate nicht ungünstig beeinflusst, aber in einigen Fällen haben die Längsinzisionen in der Mittellinie der proximalen Phalanx zu Kontrakturen wegen Narbenbildung geführt.

Die Resultate werden mit denen anderer Verfasser verglichen, welche andere Inzisionen verwendet und eine Totalresektion der Aponeurose ausgeführt haben.

Das Problem der totalen oder partiellen Resektion der Aponeurose ist, unter Hinsicht auf die verschiedenen Altersgruppen, besprochen worden. Der Verfasser ist zu dem Schluss gekommen, dass man bei älteren Patienten sich immer vor Auge halten soll ob der Process progressiv ist oder nicht, und dass im letzteren Falle eine Totalresektion der Aponeurose kaum notwendig sein dürfte, um ein gutes funktionelles Resultat zu erzielen. Bei jüngeren Individuen jedoch, sollte die Operation so radikal wie möglich ausgeführt werden. (Totalexzision der Aponeurose).

Die Untersuchung zeigt dass ein ausgezeichnetes Resultat in 55,6%, ein gutes in 37,8% erhalten wird. Mit anderen Worten: Ein zufriedenstellendes Resultat wurde in 93,4% der Fälle erhalten.

REFERENCES

- Einarsson, F.*: Acta Chir. Scandinav. 93:1, 1946.
Meyerding, H. W.: Arch. Surg. 32:320, 1936.
— *Am. J. Surg.* 49:94, 1940.
Skoog, T.: Acta Chir. Scandinav. 96 suppl. 139, 1948.
v. Stapelmohr, S.: Svenska Läkartidningen No. 2, 1947.