Dupuytren's Contracture: THE MANAGEMENT OF ONE HUNDRED PATIENTS

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Publisher Information  The Journal of Bone and Joint Surgery
20 Pickering Street, Needham, MA 02492-3157
www.jbjs.org
Dupuytren’s Contracture

THE MANAGEMENT OF ONE HUNDRED PATIENTS

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Since Dupuytren’s contracture is first treated by operation, various types of fasciotomy and fasciectomy have been popular. In 1948, Skoog discussed the variety of procedures that had been described and remarked, “It is nevertheless interesting to follow the development from an earlier date, when simple division of the retracted aponeurosis was performed, to later more radical measures and finally to complete aponeurosectomy, which is now recommended to a great extent.” Despite his preference for the latter procedure, he indicated that there was still difference of opinion when he wrote “This survey is also justified by the fact that older methods still have supporters.” Even in the past few years, three different authorities have supported radical excision of the palmar fascia, subcutaneous fasciotomy, and limited fasciectomy.

This report is based on a study of 100 patients with Dupuytren’s contracture who were seen between January 1959 and December 1964. The study began when there was a definite trend away from radical excision of the palmar fascia toward removal of only the thickened fascia that was causing finger contracture. The purpose of the study was twofold. First, to assess our ability to select the correct patient for treatment, and second, to choose the most appropriate operation for each patient treated.

The age and sex distribution in this series (Fig. 1) were similar to those in other reports. About two-thirds of the patients were in the sixth and seventh decades of life. It is usually stated that about one-half of the patients have the disease bilaterally. Thus, in the 1251 cases collected by Skoog, the incidence of bilateral disease was 55 per cent. However, in the present series, seventy-two patients had bilateral disease and twenty-eight had unilateral involvement. Fifty-four of the seventy-two patients with bilateral disease were operated on, fourteen of them bilaterally. Of the twenty-eight patients with unilateral involvement, fourteen had right-handed and fourteen had left-handed disease; ten right hands and eight left hands were operated on in the group with unilateral involvement. Eighty-six hands in seventy-two patients were, therefore, treated surgically.

Indications for Treatment

Nodules or thickened bands in the palm or fingers were not considered to be indications for operation, regardless of the amount of skin involvement (Fig. 2). Lack of hyperextension or even slight contracture at the metacarpophalangeal joint also was not considered to warrant operation. The collateral ligaments of the metacarpophalangeal joint are taut when the joint is in flexion so it is possible to gain full extension at this joint by removal of the offending fascia, regardless of the severity or duration of the contracture. Even slight contracture at the proximal interphalangeal joint, however, was an indication for operation (Figs. 3-A, 3-B, and 3-C), since a

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flexion contracture at this joint, even of short duration, is difficult to correct because the ligaments shorten after fixation in any degree of flexion.

Of the twenty-eight patients who were not operated on, the disease was not far enough advanced in fourteen to require treatment. Some of these patients, who were seen because of painful palmar nodules, were reassured that the pain would disappear within a few months.\(^8\) No other type of treatment, such as radiation, physical therapy, or the administration of alpha-tocopherol or cortisone, was advised.\(^*\)

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**Fig. 1**

Age and Sex of 100 Patients with Dupuytren's Contracture

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Males</th>
<th>Females</th>
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<tr>
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</tr>
<tr>
<td>70-79</td>
<td>11</td>
<td>2</td>
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**Fig. 2**

Fig. 2: The left hand of a thirty-nine-year-old man with a palmar nodule and skin retraction. He was unable to hyperextend the little finger, but no treatment was advised and no progression was evident during the three years that the patient was followed.

**Fig. 3-A**

Fig. 3-A: Proximal interphalangeal joint contracture of about one year's duration in a woman, sixty-four years old. Full correction was obtained by excision of the offending fascia in the finger only under local anaesthesia.

* A series of ten patients with varying degrees of involvement of their hands were given alpha-tocopherol for periods of six weeks to three months in a dose of 1000 milligrams per day. No objective improvement was noted.

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Fig. 3-B: Metacarpophalangeal-joint contracture in a man sixty-nine years old. Operation was not advised at the time this photograph was made but was performed one year later when the contracture was somewhat greater; full correction was obtained.

Fig. 3-C: More advanced metacarpophalangeal-joint contracture in a man, fifty-four years old. Operation resulted in full correction.

Radical Excision Limited Excision Subcutaneous Fasciotomy and Amputation

25% 60% 15%

Fig. 4
Types of operation used in this series and the frequency of each.

Seven patients were not operated on because of other illness. Four of them had advanced rheumatoid arthritis, and three had a recent disability due to coronary-artery disease. Neither of these conditions is a contra-indication to operation, as some improvement can often be gained by minimum operation under local or regional block anesthesia. However, in these seven patients, either their contracture was not severe or their general condition contra-indicated any treatment. Finally, seven patients who were candidates for operation refused treatment.
Fig. 5-A: Preoperative photograph of the left hand of a man sixty-four years old. Severe flexion contractures at the metacarpo-phalangeal and proximal interphalangeal joints of the ring and little fingers are shown.

Fig. 5-B: Postoperative appearance. Function of the hand was much improved by amputation of the ring and little fingers. Some extension of the remaining stumps was gained by subcutaneous fasciotomy in the palm.

Fig. 6

Diagram of the placement of suction tubes in the palm after radical fasciotomy. Micro Wound Tubing was used and was connected to a Snyder Hemovac.

Types of Operation

The choice of operation (Fig. 4) depended on the age and general condition of the patient, the duration and severity of flexion contracture at the proximal inter-
phalangeal joint, and the number of digits involved. The quality of the skin overlying the contracted fascia was not a factor in choosing one or the other procedure nor was the presence of knuckle pads or the history of Dupuytren's diathesis. However, as limited a dissection as possible was done in patients with a thick chubby hand, who, according to Barclay, would have a high endomorphy rating and hence be liable to excessive postoperative swelling.

Subcutaneous fasciotomy and amputation were grouped together because the two procedures were often performed on the same hand or for the same type of problem, that is, in the elderly patient with advanced disease who could not tolerate, or benefit from, excision of the diseased fascia. Subcutaneous fasciotomy was only performed in the palm in which there was little danger of damage to the neurovascular bundles and in which division of the band usually relieved contracture at the metacarpophalangeal joint. The subcutaneous procedure was not performed in the finger because of the danger of division of the neurovascular bundle and also because simple division of the palpable bands rarely corrects contracture at the proximal interphalangeal joint. Amputation was reserved for fixed and severe contracture at the proximal interphalangeal joint. No patient had an amputation for contracture at the metacarpophalangeal joint (Figs. 5-A and 5-B).

A radical excision of the palmar fascia was performed on twenty-two hands. This operation was reserved for hands in which more than two rays of palmar fascia were producing finger contracture and for patients who were considered to be capable of tolerating the greater surgical intervention. The fascia was exposed through a single transverse incision in or near the distal crease of the palm. As described by Shaw, the dissection began on the radial side of the palm and usually the fascia of the index finger ray was removed even though it was not thickened. The fascia was incised proximally about three centimeters beyond the distal crease of the wrist, and the dissection entered the base of each digit as well as removing each natatory ligament. Fascia from any involved digit was exposed and removed through the Z-plasty incision of McIndoe and Beare. Before wound closure, the tourniquet was released, bleeding was controlled by cautery, and the tourniquet was re-inflated. Suction tubes were then inserted into the palm through the second and fourth web spaces and the wounds closed (Fig. 6). Suction was continued for three to five days, during which time moderate finger movement was encouraged. Routinely, the hand was elevated on pillows when the patient was in bed or supported above shoulder level when the patient was ambulatory.

Most patients had a limited excision of the palmar fascia; that is, removal only of the offending fascia from one ray or occasionally from two rays. The excision was limited not only in width but also in depth. The dissection of the palmar fascia remained close to the thickened bands so that a minimum of fibrofatty tissue was disturbed. No attempt was made to remove the dorsal septa deep to the level of the neurovascular bundles, although thickened bands close to the lumbrical canal and the involved natatory ligaments were always removed. The fascia was exposed through a longitudinal incision which began about three centimeters distal to the distal crease of the wrist and extended beyond the middle crease of the finger. The skin edges were undermined only enough to expose the involved fascia and to assure the continuity of the neurovascular bundles. The longitudinal incision was broken by two and sometimes three Z-plasties (Figs. 7-A and 7-B). The palmar Z-plasties helped to some extent to correct the invisible skin loss that occurs with long-standing contracture. The Z-plasty in the finger, as described by McIndoe and Beare, not only added extra skin longitudinally but also afforded excellent exposure. Whereas a limited excision with minimum dissection of normal tissue was done in the palm, an attempt was made to remove all of the fascia from the volar surface and the sides of
the finger. The neurovascular bundles were exposed along the entire course of the dissection, but particular care was taken to identify them in the finger where they could be displaced to the mid-line or beyond by contracture of the lateral band. It was always possible to free the neurovascular bundle from the thickened fascia. This more extensive finger dissection was necessary to obtain maximum correction at the proximal interphalangeal joint. Usually, dissection to the level of the proximal interphalangeal joint was sufficient, but occasionally the dissection was extended to the distal joint to correct contracture at this level. After wound closure, the hand was enclosed in a bulky dressing with a dorsal splint for ten to fourteen days with the fingers almost straight at the metacarpophalangeal joint but comfortably flexed and free to move at the interphalangeal joints.

The Use of Skin Grafts

Free skin grafts were not used at the time of excision. If the viability of the skin was in doubt, the dressing was removed on the fourth postoperative day and a decision made at that time on the need for a skin graft. Frequently, the skin was dissected so thinly as to be really a full-thickness skin graft. These areas were immobilized by a tie-over dressing in the same way as a free graft and almost always survived.

Skin grafts were needed in four patients. Two patients with recurrent disease required excision of skin, as well as fascia, to correct their deformity. The wounds were covered by free skin grafts four days later. In one patient, primary closure was attempted in the palm under tension. Four days later when the dressing was changed in the operating room, necrosis of the triangular flaps of the Z-plasty was found. The necrotic skin was excised and a free skin graft was applied. A pedicle flap of the skin
Fig. 8-A: Contracture at the metacarpophalangeal and proximal interphalangeal joint of about twenty years' duration in a man fifty-four years old.

Fig. 8-B: Postoperative appearance. The metacarpophalangeal joint has been corrected completely, but there was no improvement in the flexion at the proximal interphalangeal joint.

Anesthesia

It was the prerogative of the anesthesiologist to choose the type of anesthesia for each patient. Fifty-three patients had a general anesthetic. Our preference was for regional block anesthesia because there is less likelihood of restlessness and nausea which may produce bleeding in the immediate postoperative period. Twenty-two regional blocks were given by the axillary route; eleven by local infiltration. All subcutaneous fasciotomies were performed under local anesthesia.

Results

It is impossible to restore every hand affected by Dupuytren's contracture to normal. Therefore, results were judged in relation to the type of contracture and its anticipated correction. Although a subjective evaluation of results is open to criticism, it was used in this series because it seemed the best way to evaluate the choice of treatment, as well as the operation. A good result was one which was expected. The wound healed without skin loss or hematoma. There was minimum swelling and stiffness of the hand so that the patient could make a firm fist within four to six weeks. Full extension was not expected in those patients who had a fixed flexion deformity at the proximal interphalangeal joint but was always expected at the level of the metacarpophalangeal joint (Figs. 8-A and 8-B).

A fair result was one in which maximum correction of the finger contracture was not obtained or was gained only after intensive physiotherapy and splinting of the
Fig. 9-A: Example of a poor result. Maximum flexion of the right little finger in a man thirty-nine years old who had had a radical fasciotomy one year previously. A hematoma in the palm was not evacuated.

Fig. 9-B: Example of a poor result. The appearance of the hand of a man, fifty-one years old, who had had a limited fasciotomy for contracture of the ring finger six weeks previously. Within two weeks of operation there was pain and limitation of movement in all of the joints of the upper extremity and the hand was stiff and diffusely swollen.

hand. Although the contracture was eventually corrected or improved, the period of disability was prolonged.

A poor result was one in which the contracture was not improved or one in which some serious complication ensued, such as hematoma or prolonged swelling.

The results of operation in eighty-six hands in the seventy-two patients in this series were good in seventy hands (80 per cent), fair in ten (13 per cent), and poor in six (7 per cent).

The causes of the fair and poor results fell roughly into three categories. First, four operations were technically unsatisfactory because the offending fascia was not completely removed. In each hand, this was due to incomplete removal of the lateral band within the proximal segment of the finger. Second, five operations were of the wrong type. In four patients a limited excision was done in the presence of a fixed and severe contracture at the proximal interphalangeal joint. Little or no correction of the flexion deformity was gained. These patients should have been offered amputation; and, in fact, the offending finger was amputated subsequently in three of them. In the fifth hand, a radical excision of the palmar fascia was performed; but, in retrospect, this should have been a limited operation. Technically, the operation was satisfactory and there were no immediate postoperative complications, but the patient failed to gain extension of the fingers or regain flexion despite adequate physiotherapy. Third, prolonged swelling, with stiffness of the fingers and almost total loss of function of the hand, occurred in seven patients. This was by far the most distressing postoperative problem. In two patients, this occurred after a limited operation; once after a wound infection and once in association with a shoulder-hand syndrome (Figs. 9-A and 9-B). In the five other patients, a radical operation was performed; but, even in retrospect, this type of operation was deemed necessary in order...
to remove the offending fascia. In two of these patients the swelling was preventable.
A hematoma developed in the palm which was not evacuated promptly under anesthesia, as stressed by Shaw. The remaining three patients had a high endomorphy rating. Their hands were certain to swell after any surgical intervention and particularly after a radical excision of the palmar fascia. Each of these patients was warned of the probability of prolonged morbidity. Each of them obtained full flexion and extension of the fingers but only after many weeks of physiotherapy.

The results according to the type of operation were as follows: Of twenty-two radical procedures, 77 per cent were good and 23 per cent were fair or poor; of fifty limited fasciectomies, 78 per cent were good and 22 per cent were fair or poor; of fourteen amputations or fasciotomies, results in all were good. Thus, the results following the radical and the limited fasciectomy were almost identical, suggesting that the selection of both patient and operation was satisfactory in this series. The uniformly good results after amputation or fasciotomy simply indicate that there were no postoperative complications. If enough correction of the contracture was not obtained by fasciotomy, the finger was amputated immediately. At the time of writing, only one patient in the fasciotomy group had been operated on for recurrent contracture four years after the first operation.

Recurrence and Extension

All patients were followed for one year after operation and most patients were reviewed recently, either by examination or by questionnaire. Our criterion for recurrence in the area of operation or extension elsewhere in the same hand was a recurrent joint contracture sufficient to require further operation rather than the appearance of nodules in the treated area or slight progression of the disease in the same hand. By this criterion, the incidence of recurrence and extension was very low. Gordon reported an incidence of 36 per cent in 120 hands but did not mention the number of patients who required further operation. Excluding our four patients in whom the initial fasciectomy was obviously inadequate, there were two patients with recurrences which required reoperation nine months and two years, respectively, after their original operations and one patient with extension who required further operation one year after the first procedure.

Follow-up of Patients Not Operated on

It is important to select the correct operation for each patient, but it is equally important to decide which patients should not be operated on. In fourteen of the twenty-eight patients who were not operated on, the disease was not sufficiently advanced, by our criteria, to warrant operation. In addition, forty patients with bilateral involvement had only one hand operated on. Therefore, fifty-four patients were known to have Dupuytren's contracture which had not been treated.

Two of these patients died after they were first examined, and nine were lost to follow-up. Of the remaining forty-three patients, twenty-eight were re-examined and fifteen were contacted by questionnaire. Since some of these forty-three patients had bilateral involvement, forty-nine hands were available for this analysis. The average age of the forty-three patients with forty-nine hands involved was 53.5 years (range, twenty-eight to seventy-two years). The average follow-up was 41.6 months, the range being ten to seventy-six months. Thirteen hands (26.5 per cent) showed progression of the disease, and six of these (10.2 per cent) needed operative treatment at the time of writing.

Discussion

The purpose of the study was to test the indications for operation that have
been described and to see if better results could be obtained by varying the type of operation. However, the over-all results are no better than those published in most series in which a particular operative technique was used. Because of the many factors that must be considered in assessing an individual result, a subjective evaluation is necessary; and yet, almost invariably, about 80 per cent of patients obtain a good result. The analysis of our fair and poor results shows that about one-half of them could have been prevented. In seven of sixteen operations, the failure was due to inadequate excision (four), infection (one), and hematoma (two). The remainder of the fair and poor results were due to the type of problem in the patient’s hand rather than to the surgical technique and could not have been prevented. In four hands, the contracture could not be corrected by operation and in five hands the patient reacted unfavorably to the trauma of operation (which we feel could not have been prevented if the offending fascia was to be removed).

Of the seventy-two patients with eighty-six hands operated on, there were three who required further operation, two because of recurrence and one because of extension. This is ample proof that a more extensive removal of the palmar fascia is not necessary, either to prevent recurrence of a contracture or to obviate the need for a further operation because of extension of the disease.

Finally, only six of forty-nine hands with Dupuytren’s contracture not initially treated and followed for one to six years required operation. On this basis it is concluded that an early or aggressive approach to treatment is not warranted with the single exception of contracture at the proximal interphalangeal joint.

Summary

One hundred consecutive patients with Dupuytren’s contracture were examined and seventy-two of these were operated on.

The operations were radical and limited excision of the palmar fascia as well as subcutaneous fasciotomy and amputation. An analysis of the results of each method of treatment is given.

The patients whose hands were not operated on were followed to determine the rate of progress of their disease and the need for operation.

Note: One half of the patients in this series were seen at Westminster Hospital, Department of Veterans Affairs, London, Ontario. The authors are grateful to Dr. C. C. Ross and the members of his surgical service for the opportunity to manage all of the patients with Dupuytren’s contracture who were referred to the surgical service.

References