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The Treatment of Dupuytren's Contracture by Partial Fasciectomy

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The purpose of this presentation is to describe a conservative operative procedure which we have used since 1952 to correct the deformities of Dupuytren's contracture. Fifty-one hands have been observed before and after surgical correction of deformities of varying severity. Surgical correction has been reserved for hands with limitation of finger motion. In one patient with normal finger motion, painful nodules of diseased fascia were removed.

For a review of the history, pathogenesis, pathology, methods of treatment, and results, the reader is referred to the outstanding works on Dupuytren's contracture by Boyes, Bunnell, Conway, Dupuytren, Kanavel, Luck^{13,14}, Mason, Meyerding, and Skoog. There is agreement among those most experienced in the treatment of Dupuytren's contracture that the most effective attack is surgical. There is, however, some disagreement as to the choice of technique. In general, there are three recognized types of operation. The most conservative form is subcutaneous fasciotomy with or without excision of diseased fascia at the base of the finger. The most extensive procedure is what has been called radical fasciectomy, in which all palmar fascia, along with the vertical septa which pass to the preosseous fascia and the bands extending into the fingers, is excised. Partial fasciectomy or excision of only the diseased or contracted palmar fascia is much less extensive than radical excision but allows more adequate excision and correction of the deformity than can be obtained by subcutaneous fasciotomy.

Subcutaneous fasciotomy and partial fasciectomy were used in the treatment of Dupuytren's contracture in the nineteenth century^{1,5,9,12}. Because of progress in anesthesia and surgical technique, more extensive surgical treatment became popular so that, during the past twenty-five years, radical fasciectomy has been the most widely recommended treatment for Dupuytren's contracture.

Excellent results are frequently obtained by this method, but because of the wide dissection necessary, serious complications tend to occur more often than with less extensive surgery. Infection, hematoma, skin slough, and limitation of finger motion occasionally follow radical fasciectomy, and any of these may be a catastrophe. Therefore, less extensive surgical methods to correct the deformities of Dupuytren's contracture are desirable provided that satisfactory results can be obtained.

Luck recently revived interest in the conservative approach with his technique of subcutaneous fasciotomy^{13,14,15}. He made an intensive study of the pathogenesis of Dupuytren's contracture and reported the results of 206 hands treated by this method. He emphasized that good results can be obtained by subcutaneous fasci-

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otomy with a very low incidence of complications and with decidedly less stress to the patient and surgeon.

Hamlin^{7,8} and Hueston reported on their experiences with partial fasciectomy utilizing longitudinal incisions overlying diseased areas and extending from the base of the palm to the fingers. Their results were good and complications were reduced compared with those following radical fasciectomy.

We have used a similar method of excision of the diseased palmar fascia during the past nine years. Through multiple, short, longitudinal incisions in the palm and conventional finger incisions, excellent exposure of the diseased and contracted fascia is obtained. Undermining of skin and dissection of tissues are kept to a minimum.

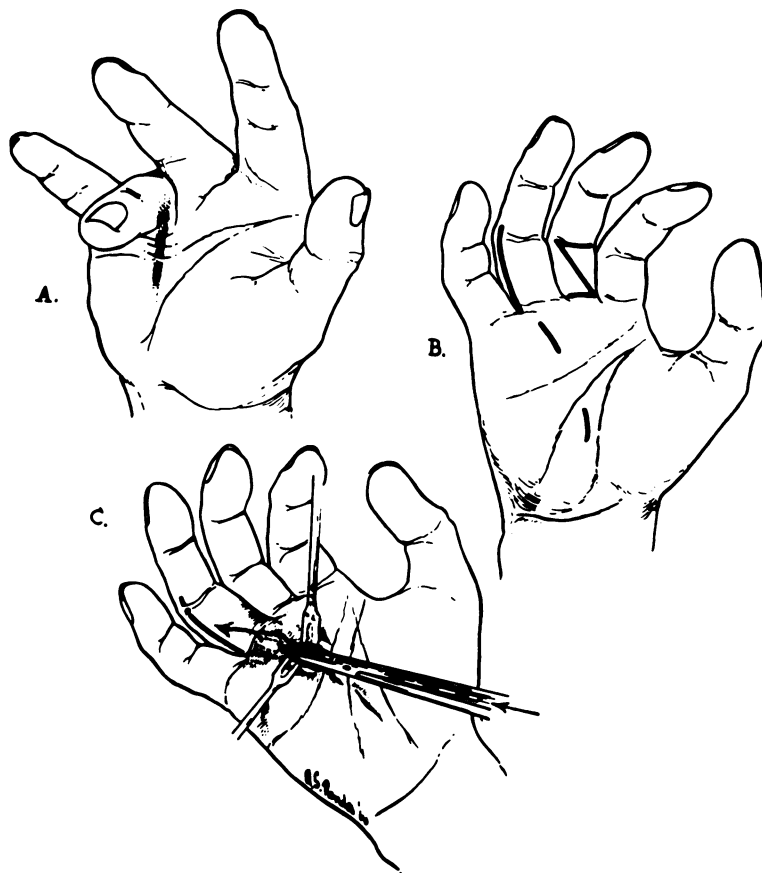


FIG. 1

Fig. 1, A: A typical deformity of Dupuytren's contracture involving the ring finger.

Fig. 1, B: Exposure of tight fascial bands can be obtained through short longitudinal incisions in the palm and a mid-lateral incision on the proximal segment of the finger. A Z-shaped or oblique incision, demonstrated on the long finger, can be used in place of the mid-lateral incision.

Fig. 1, C: Diseased fascia is tunneled beneath bridges of skin from the proximal wound until it can be brought into the mid-lateral finger wound.

Excision of the diseased fascia is accomplished with relative ease under direct vision; and danger to tendons, nerves, and vessels is less than with subcutaneous fasciotomy. The results have been characterized by satisfactory correction and absence of significant complications.

Technique

The palm is first palpated with the fingers extended to the maximum. When this is done, a discrete fascial band can usually be felt extending from the base of the

palm to each involved finger. During fasciectomy, it has been observed that these bundles are usually separate or only loosely attached to adjacent bands by transverse or oblique fibers in the distal portion of the palm. Excision of diseased fascia results in marked improvement of pre-existing finger contractures.

With a pneumatic tourniquet applied to the arm, a longitudinal incision, one to two centimeters long, is made at the base of the palm. With sharp dissection, the base of the palmar fascia is exposed and freed from surrounding tissues. Through this incision, the fascial bands to each finger are visualized. One or more longitudinal incisions are then made overlying each tight fibrous bundle distal to the first incision, care being taken not to cross flexion creases at right angles. In each incision, the



FIG. 2-A

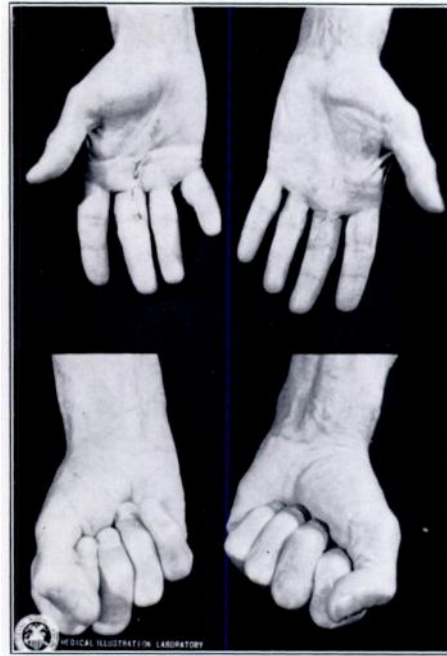


FIG. 2-B

Fig. 2-A: Case 23. Photographs show the degree of deformity prior to partial fasciectomy, even though radical fasciectomies had been previously performed.

Fig. 2-B: Photographs made seven days after operation on the right and one month after operation on the left show excellent correction.

contracted fascia is freed from surrounding structures. A mid-lateral incision is then made on the proximal segment of each involved finger, and the fascia is exposed. The fibrous bundle to each contracted finger is severed at the base of the palm, raised, and freed from the underlying tissues. When each fascial band is elevated, the vessels and nerves are clearly visualized. After freeing the fascia in the proximal wound, the diseased tissue is mobilized beneath the bridge of skin and pushed into the wound just distal. Here the diseased fascia is again separated from the surrounding structures. This procedure is repeated until the fascial band has been brought into the finger wound. The most distal attachment of the band is then severed. Instead of using mid-lateral incisions, it is sometimes advantageous to use oblique or even Z-shaped incisions on the palmar aspect of the proximal segment of the fingers. When more than one finger is contracted, multiple longitudinal palmar incisions must be made overlying each contracted fascial bundle. In these situations, one incision at the base of the palm is usually sufficient. In the distal part of the palm, incisions overlying the tight bands are side by side.

TABLE I

Case	Sex	Age at Surgery (Years)	Duration of Disease (Years)	Nature of Contracture	Date of Surgery	Length of Observation	Result	Remarks
1	M	63	15	Tips of ring and little fingers pulled down to palm, both hands	Right 5-8-52 Left 6-12-52	7 yrs. 7 yrs.	Excellent Excellent	Died 1959
2	F	61 63	5	Loss of last 45° of extension at the MP and PIP joints, ring finger, both hands	Right 2-22-55 Left 2-19-57	7 yrs. 5 yrs.	Excellent Excellent	
3	M	73 75	15	Loss of last 45° of extension at the MP and PIP joints, ring finger, right hand; same degree of contracture on left but involving little finger	Left 1-19-56 Right 11-6-58	6 yrs. 3 yrs. 2 mos.	Excellent Excellent	
4	M	46	3	Loss of last 30° of extension at the MP joints, ring and little fingers, right hand	7-19-56	5 yrs. 6 mos.	Excellent	
5	M	50	4	Loss of last 45° of extension at the MP joint, ring finger, left hand	6-5-56	5 yrs.	Excellent	Died 1961
6	F	68	5	Loss of last 45° of extension at the MP and PIP joints, ring and little fingers, both hands	Left 1-15-57 Right 3-20-57	5 yrs. 4 yrs. 10 mos.	Excellent Excellent	Small nodules developed in both hands, excised 5-22-58; mild numbness left little finger
7	M	44	20	Loss of last 45° of extension at the MP and PIP joints, ring and little fingers, left hand	8-1-57	2 yrs. 5 mos.	Excellent	Radical fasciectomy performed on right hand in 1951 resulting in stiff claw hand
8	M	69	15	Loss of last 45° of extension at the MP and PIP joints, ring finger, right hand	9-6-58	3 yrs. 4 mos.	Excellent	
9	F	66	5	Loss of last 45° of extension at the MP and PIP joints, ring finger, right hand	11-20-58	3 yrs. 2 mos.	Excellent	

10	M	46	10	Loss of last 45° of extension at the MP joint, ring finger, left hand	12-4-58	3 yrs. 1 mo.	Excellent	Hypesthesia on ulnar side of left ring finger; old traumatic flexion contracture, left little finger
11	M	71 73	30	Tips of ring and little fingers pulled down to palm, both hands	Right 12-22-58 Left 6-21-60	3 yrs. 10 mos. 2 yrs. 4 mos.	Excellent	Subcutaneous fasciotomies done in 1958 with no improvement
12	M	71	15	Tips of ring and little fingers pulled down to palm; severe adduction contracture of thumb, left hand	6-25-59	2 yrs. 7 mos.	Excellent	Subcutaneous fasciotomies 12-20-52 with recurrence
13	M	59	10	Loss of last 30° of extension at the MP joint and of last 15° at the PIP joint, ring finger, right hand	9-25-59	2 yrs. 4 mos.	Excellent	Extension of disease to base of little finger, surgery not indicated
14	M	51	15	Loss of last 60° of extension at the MP joint, long finger, right hand	6-8-59	2 yrs. 7 mos.	Excellent	Radical fasciectomy, right hand, in 1952, with recurrence
15	M	64	5	Loss of last 75° of extension at the MP joint and of last 15° at the PIP joint, ring finger, right hand	8-25-59	2 yrs. 5 mos.	Excellent	
16	M	61	30	Loss of last 90° of extension at the MP joint and of last 30° at the PIP joint, ring finger, both hands	Right 10-9-59 Left 10-15-59	2 yrs. 3 mos. 2 yrs. 3 mos.	Good Good	Severe degenerative arthritis of all fingers
17	M	66	15	Loss of last 45° of extension at the PIP joint, little fingers, both hands	Right 1-7-60 Left 1-12-60	2 yrs. 11 mos. 2 yrs. 11 mos.	Good Excellent	
18	M	62 63	5	Loss of last 30° of extension at the MP joint, ring finger, left hand; no contracture in right hand, but painful nodule in mid-palm, right hand	Left 10-19-59 Right 5-17-60	2 yrs. 3 mos. 1 yr. 8 mos.	Excellent	Extension lateral to previous excision in mid-palm, right hand; surgery not indicated
19	M	69	15	Loss of last 45° of extension at the MP and PIP joints, ring and little fingers, right hand	4-7-60	1 yr. 11 mos.	Excellent	Moderate swelling and soreness for 3 months after surgery

TABLE I (Continued)

Case	Sex	Age at Surgery (Years)	Duration of Disease (Years)	Nature of Contracture	Date of Surgery	Length of Observation	Result	Remarks
20	M	72	15	Loss of last 45° of extension at the MP joint, ring fingers, both hands	Right 3-29-60 Left 4-11-60	1 yr. 10 mos. 1 yr. 9 mos.	Excellent Excellent	
21	M	47	10	Loss of last 45° of extension of the MP joint, ring fingers, both hands	Left 3-24-60 Right 4-7-60	1 yr. 10 mos. 1 yr. 9 mos.	Excellent Excellent	
22	M	36	2	Loss of last 20° of extension at the MP joint, both hands	Right 5-16-60 Left 5-20-60	1 yr. 8 mos. 1 yr. 8 mos.	Excellent	
23	M	64	20	Loss of last 30° of extension at the MP and PIP joints, long finger, right hand; loss of last 45° of extension at the MP and PIP joints, long finger, left hand; mild adduction contracture of left thumb	Left 4-13-60 Right 4-27-60	1 yr. 9 mos. 1 yr. 9 mos.	Excellent Excellent	Extensive fasciectomy performed in 1948 and 1953 on the left hand with recurrence; extensive fasciectomy performed in 1953 on the right hand with recurrence
24	M	83	25	Tips of ring and little fingers pulled down to palm, both hands	Left 5-24-60 Right 5-30-60	1 yr. 8 mos. 1 yr. 8 mos.	Fair Fair	Persistent flexion contractures of 35° in the MP and PIP joints of both fingers due to failure to exercise
25	M	45	10	Loss of last 45° of extension at the MP joint, ring finger, right hand	8-11-60	1 yr. 5 mos.	Excellent	
26	M	67	15	Loss of last 75° of extension at the MP and PIP joints, ring and little fingers, both hands	Right 10-26-60 Left 11-2-60	1 yr. 2 mos. 1 yr. 2 mos.	Good Good	Intrinsic muscle weakness with claw hands as a result of old injuries
27	M	63	15	Loss of last 30° of extension at the MP and PIP joints, ring finger, right hand	11-9-60	1 yr. 2 mos.	Excellent	

28	M	61	15	Loss of last 45° of extension at the MP and PIP joints of the long, ring, and little fingers, right hand	4-13-61	1 yr. 6 mos.	Excellent
29	M	70	30	Loss of last 45° of extension at the MP joint, ring finger, right hand	6-16-61	1 yr. 4 mos.	Excellent
30	M	77	5	Loss of last 45° of extension at the MP joint, ring finger, right hand	7-12-61	1 yr. 1 mo.	Excellent
31	M	57	10	Loss of last 90° of extension of the MP and PIP joints, ring and little fingers, left hand; loss of last 60° of extension at the MP joint, ring finger, right hand	Left 9-6-61 Right 9-20-61	1 yr. 2 mos. 1 yr. 2 mos.	Fair Excellent
32	M	70	15	Loss of last 45° of extension at the MP and PIP joints, ring and little fingers, left hand; loss of last 90° of extension at the MP and PIP joints, ring and little fingers, right hand	Left 9-5-61 Right 9-22-61	1 yr. 1 mo. 1 yr. 1 mo.	Excellent Poor
33	M	40	5	Loss of last 80° of extension at the PIP joint, little finger, right hand	9-22-61	1 yr. 3 mos.	Excellent
34	M	62	5	Loss of last 90° of extension at the MP and PIP joints, ring and little fingers, left hand	10-4-61	1 yr. 2 mos.	Excellent
35	F	61	2	Loss of last 30° of extension at the MP joint and of last 90° at the PIP joint, little finger, left hand	10-18-61	1 yr.	Poor
36	M	74	15	Loss of last 90° of extension at the MP joint and of last 30° at the PIP joint, little finger, and of last 45° at the MP joint, ring finger, left hand; loss of last 45° of extension at the MP joint, ring finger, right hand	Left 11-3-61 Right 11-17-61	1 yr. 1 mo. 1 yr. 1 mo.	Excellent Excellent
37	M	41	2	Loss of last 45° of extension at the MP joint, ring finger, left hand	12-12-61	1 yr.	Excellent

Persistent flexion contracture of 35° in the MP and PIP joints of both fingers, left hand

Although result of partial fasciectomy was excellent, he sustained right brachial plexus injury 1-29-61 resulting in stiff fingers

Recurrence to previous deformity corrected by partial fasciectomy 10-6-62

After removal of the contracted tissue, there is immediate marked improvement in extension of the involved finger or fingers. When contractures are severe and long-standing, however, complete correction is not obtained at the time of surgery, but further improvement will often be observed over the subsequent months. At the completion of the procedure, the tourniquet is released, and firm compression of the wounds is maintained for five to ten minutes. After bleeding is controlled, the wounds are closed. A bulky compression dressing is applied, and the hand is elevated for the first twenty-four hours. The average time required to perform partial fasciectomy by this method is thirty minutes.

The patient can begin active extension and flexion exercises after awakening from anesthesia. Because the wounds are longitudinal, skin edges do not separate when the fingers are extended. On the day after surgery, a small dressing is applied to the hand so that exercises can be easily carried out. The wounds are usually well healed by seven days, and sutures can then be removed. Patients who perform light tasks with their hands, such as clerks and office workers, are able to return to work several days after surgery; laborers and those who use their hands for heavy work may have to wait four weeks.



FIG. 3-A

Fig. 3-A: Case 2. Photographs show both hands after subcutaneous fasciotomies prior to partial fasciectomies.

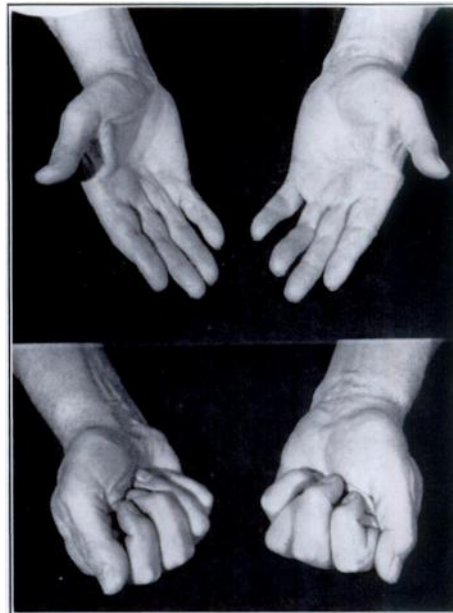


FIG. 3-B

Fig. 3-B: Complete extension and flexion of the fingers more than one year after fasciectomies are shown.

Results

Table I summarizes the results in this series. The operations were performed from 1952 to 1961. The longest follow-up was seven years; the shortest, one year. The average length of time that these patients were followed was two and a half years. One patient died of unrelated causes six weeks after operation. He is not included in this series, but his result was good at the time of his death.

The results in forty-one of the fifty-one hands were classified excellent—complete extension and flexion of the fingers with no pain. Five hands had good results—10 to 20 degrees loss of extension, or flexion, or both, of the metacarpophalangeal or the proximal interphalangeal joints of the involved fingers, with no

pain. The results in three hands were rated fair—at least 25 degrees flexion contracture of one or both of the proximal finger joints, but function of the hand improved by about 50 per cent. Two hands had poor results—function unimproved or worse. All of the hands in this series were improved except two. One of these had a recurrence of disease (Case 35), and the other had an excellent result until a brachial plexus injury occurred (Case 32). Every wound healed without incident within two weeks. Wound infection, hematoma, skin necrosis, and joint stiffness did not occur. Unexplained edema to a moderate extent occurred in Cases 21 and 35; this lasted for about three months and then disappeared.

Hypesthesia after operation occurred in two hands, on the ulnar side of the left little finger in Case 6 and on the ulnar side of the left ring finger in Case 10. Neither patient was disturbed or disabled in any way by this partial sensory loss.

Although the length of observation is not sufficient to evaluate the possibility of recurrence, only one of the patients has had a recurrence (Case 35) in the fingers treated; this was corrected by repeat partial fasciectomy. In Case 6, the disease extended to another portion of the hand about one year after partial fasciectomy, but this was easily excised. In Cases 13 and 18, small nodules developed, representing extensions of disease; these did not warrant excision at the time of writing. It must be realized that extension and recurrence have been observed regardless of the type of surgical treatment; the important point is that this can be easily dealt with by local excision when it becomes necessary.

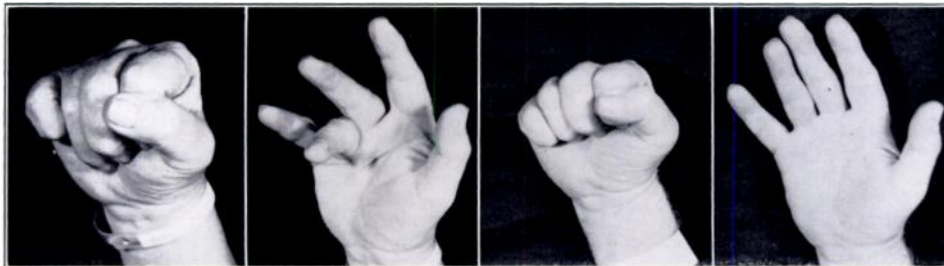


FIG. 4-A

FIG. 4-B

Fig. 4-A: Case 15. Photographs show the deformity before operation.

Fig. 4-B: Postoperative result is excellent.

None of the wounds healed with excessive scarring. Actually the healed incisions were difficult to locate and all were asymptomatic.

The length of time required for hospitalization was two days. Eleven patients were hospitalized for longer periods because of other causes. Pain and disability were minimum during the immediate postoperative period. Those who performed light tasks with their hands returned to work several days after surgery. Laborers and those who use their hands for heavy work waited four to six weeks before returning to work. Gloves or protective padding in the palm should be worn if early return to heavy work is anticipated.

All patients were instructed to begin active flexion and extension exercises of their fingers the day after operation. Gentle passive stretching was started after ten to fourteen days and continued along with active exercises indefinitely. It is felt that the fair results obtained in Cases 24 and 31 were due to failure to carry out exercises. A vigorous exercise program is of the utmost importance. Because of the nature of the surgical procedure, exercises can be begun immediately without danger.

Summary

A conservative method of partial palmar fasciectomy for Dupuytren's con-

tracture through multiple, short, longitudinal, palmar skin incisions and conventional finger incisions has been presented. Thirty-seven patients with fifty-one hands treated by this method during the past nine years have been under observation. Forty-one hands were classified excellent; five, good; three, fair; and two, poor—one to seven years after operation.

All hands except two have been markedly improved and no serious complications have occurred. One of the patients with poor results had had an excellent result until a brachial plexus injury was sustained in the involved extremity. The present series is small and a longer observation is necessary, but the described surgical procedure has been followed by rapid wound healing, low morbidity, early return to work, no significant complications, and satisfactory results.

References

1. ABBE, ROBERT: Dupuytren's Finger Contraction. Further Remarks on the Theory of Its Nervous Origin. *Med. Rec.*, **33**: 236-239, 1888.
2. BOYES, J. H.: Dupuytren's Contracture. Notes on the Age at Onset and the Relationship to Handedness. *Am. J. Surg.*, **88**: 147-154, 1954.
3. BUNNELL, STERLING: *Surgery of the Hand*. Ed. 3. Philadelphia, J. B. Lippincott Co., 1956.
4. CONWAY, HERBERT: Dupuytren's Contracture. *Am. J. Surg.*, **87**: 101-119, 1954.
5. COOPER, ASTLEY: *A Treatise on Dislocations and on Fractures of the Joints*. London, Longman, Hurst, Rees, Orme and Browne, 1823.
6. DUPUYTREN, GUILLAUME: Permanent Retraction of the Fingers, Produced by an Affection of the Palmar Fascia. (Translation.) *Lancet*, **2**: 222-225, 1834.
7. HAMLIN, EDWARD, JR.: Limited Excision of Dupuytren's Contracture. *Ann. Surg.*, **135**: 94-97, 1952.
8. HAMLIN, EDWARD, JR.: Limited Excision of Dupuytren's Contracture: A Follow-up Study. *Ann. Surg.*, **155**: 454-456, 1962.
9. HARDIE, JAMES: The Treatment of Dupuytren's Finger-Contraction. *British Med. J.*, **1**: 681, 1885.
10. HUESTON, J. T.: Limited Fasciectomy for Dupuytren's Contracture. *Plast. and Reconstruct. Surg.*, **27**: 569-585, 1961.
11. KANAVAL, A. B.; KOCH, S. L.; and MASON, M. L.: Dupuytren's Contracture. With a Description of the Palmar Fascia, A Review of the Literature, and a Report of Twenty-nine Surgically Treated Cases. *Surg., Gynec., and Obstet.*, **48**: 145-190, 1929.
12. KOCHER, THEODOR: Behandlung der Retraktion der Palmaraponeurose. *Centralbl. f. Chir.*, **14**: 481-487, 1887.
13. LUCK, J. V.: Dupuytren's Contracture. *In The Cyclopedia of Medicine, Surgery, Specialties*. Vol. 9, pp. 391-394. Philadelphia, F. A. Davis Co., 1953.
14. LUCK, J. V.: Dupuytren's Contracture. A New Concept of the Pathogenesis Correlated with the Surgical Management. *J. Bone and Joint Surg.*, **41-A**: 634-664, June 1959.
15. LUCK, J. V.: Dupuytren's Contracture. Pathogenesis and Surgical Management. A New Concept. *In Instructional Course Lectures, The American Academy of Orthopaedic Surgeons*. Vol. 16, pp. 70-80. St. Louis, The C. V. Mosby Co., 1959.
16. MASON, M. L.: Dupuytren's Contracture. *Surg. Clin. North America*, **32**: 233-245, 1952.
17. MEYERDING, H. W.; BLACK, J. R.; and BRODERS, A. C.: The Etiology and Pathology of Dupuytren's Contracture. *Surg., Gynec., and Obstet.*, **72**: 582-590, 1941.
18. SKOOG, TOR: Dupuytren's Contracture. With Reference to Aetiology and Improved Surgical Treatment. Its Occurrence in Epileptics. Note on Knuckle Pads. *Acta Chir. Scandinavica*, **96**: Supplementum 139, 1948.