The Use of Cortisone in Dupuytren's Contracture

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ALTHOUGH currently accepted treatment of Dupuytren's contracture is radical resection of the contracted palmar fascia, in some cases, it is not without danger of complications which delay recovery and jeopardize the final result. Complete excision of the contracting mass requires close dissection beneath the skin layer, thus a full-thickness skin graft is laid back down in the palm in the most unfavorable or most distal portion of the palmar flap. Necrosis of skin margins and prolonged wound healing necessitates immobilization until the skin heals. As the result of prolonged immobilization the finger joints become stiff. The alternative procedure of supplying pedicle grafts from the dorsum of the hand is often necessary when the viability of the distal ulnar flap is jeopardized. This requires split-skin grafting on the dorsum of the hand. The result is not cosmetically good and the skin is not adaptable to normal palmar sensation, nor to the normal stress and friction required of the palm.

It was hoped, on the basis of the results obtained in relieving and relaxing connective tissue contractures in other collagen diseases, that cortisone might be of benefit in the preoperative treatment of this condition. It was hoped that cortisone would relieve the extensive involvement between the palmar fascia and the skin, assure vascularity of the palmar flap, and thus facilitate surgical resection. Two patients with well-established Dupuytren's contractures of both palms were treated with cortisone. One patient had early Dupuytren's contracture in the remaining unresected fascia a few weeks after partial resection of the palm. The other patient had severely involved hands, the contracture being present for many years with extensive skin involvement in the palm.

CASE REPORTS

Case 1. A 49-year-old man was seen in consultation on 19 July 1950, at which time a moderate Dupuytren's contracture of the ring and little fingers of both hands was present. Surgical resection was recommended.

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On 25 July, through 3 short transverse incisions over the course of the fascia of the right ring finger, a contracted palmar fascia along this ulnar portion of the palm was excised. Small drains were removed in 24 hours and on 7 August primary healing had occurred.

On 17 August the ulnar half of the palmar fascia of the more severely involved left hand was excised through a routine incision along the distal palmar crease. The incision was turned bluntly along the ulnar border of the hand to the base of the palm. The thickened palmar fascia was excised en bloc from the base of the palm distally. The process had involved the skin in the distal palmar crease and only full-thickness skin was retained. Dissection was continued well down into the ring and little fingers and a midlateral longitudinal incision was made in the little finger to complete the excision. Small rubber drains were inserted and were removed in 48 hours. Except for a small necrotic area about 5 mm. in diameter at the angle of the palmar flap which delayed mobilization, the hand progressed satisfactorily. The wound finally healed and occupational therapy was begun at the end of the fourth week; movement returned slowly. Some residual contracted and thickened palmar fascia remained in the right ring finger; this was resected through a midlateral incision on 19 October and this wound also healed without complications. By 1 November about 10 weeks after the operation, the radial portion of the palmar fascia of the left hand had developed definite evidence of Dupuytren's contracture (fig. 1). The radial side of the palmar fascia had not been involved previous to the excision of the ulnar half, and it was believed that it could be safely left in the palm. Inasmuch as the viability of the flap was questionable, additional dissection seemed inadvisable. Cortisone therapy was begun on 5 January 1951, 100 mg. being given every 8 hours for 3 doses, followed by 100 mg. every 12 hours for 2 doses, then 100 mg. daily. Within 5 days some softening of the indurated areas occurred and the patient noticed marked improvement in the stiffness of the fingers of both hands and for the first time he was able to make a tight fist with his right hand.

By early February the improvement in the palm was definite and the thickened fascia was difficult to palpate (fig. 2). The final operation was performed on 27 March. Cortisone therapy was discontinued at this time. The radial half of the palmar fascia was excised through a transverse incision in the distal palmar crease, carrying the dissection proximally and distally through this incision. The contracted fascia was easily isolated, did not seem to be involved with any extensive scarring, and was mobilized without difficulty. The wound healed without incident, the range of motion in the hand continued to improve, and by mid-May there was complete softening of both palms and full extension of all finger joints. Microscopic examination of the tissue revealed fibrosis of the palmar fascia (Dupuytren's contracture) and bundles of dense collagenous fibrous tissue with occasional flattened fibroblasts. Between the collagenous bundles there were small blood

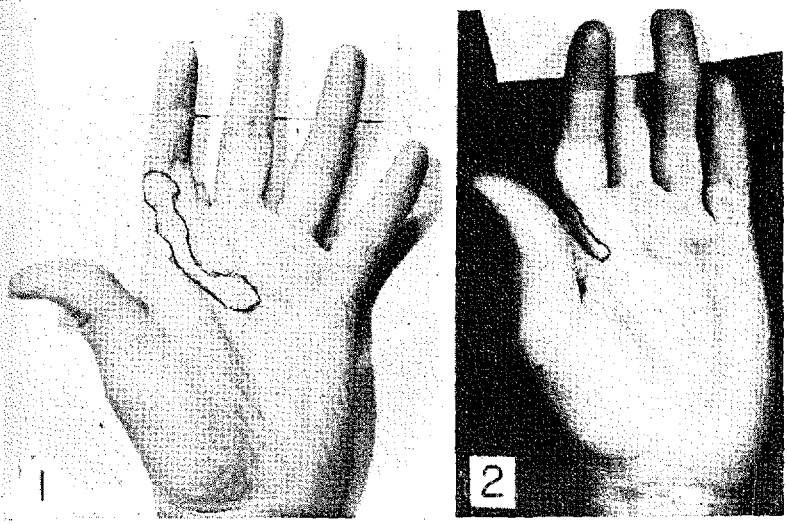


Figure 1 (case 1). Photograph taken on 12 January 1951 showing postoperative condition of hand before cortisone therapy. The palpable mass is outlined. Figure 2 (case 1). Photograph taken on 2 February 1951 showing shrinkage of contracture mass after 4 weeks of cortisone therapy.

vessels surrounded by scant lymphocytic infiltration. No aberrations of the microscopic picture that could be attributed to cortisone therapy were noted.

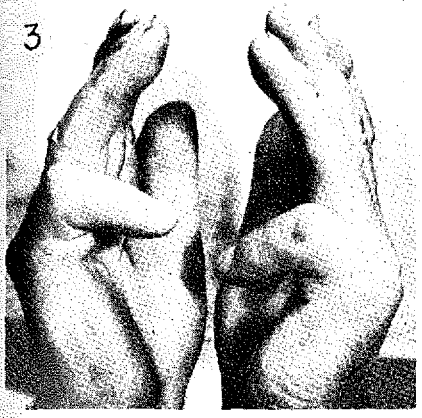
Case 2. A 60-year-old man was admitted on 23 October 1950. He stated that he had first noticed contractures in both hands in 1938. He remembered sustaining a rather minor contusing blow to the right palm and a minor squeezing injury to the left palm in 1937, but the injuries were trivial and the hands were normal between the time of these injuries and the time the contractures started. Since the onset, the contractures had gradually progressed without any known relationship to injury or illness. The deformities had begun in the little finger in both hands and gradually involved the fingers in sequence toward the radial side of the palm. Examination on 8 December revealed a typical severe Dupuytren's contracture in both hands (fig. 3). The right little finger could extend only 2 inches from the palm to the fingernail tip; the metacarpophalangeal joint of this finger extended actively and passively only to 110 degrees and the proximal interphalangeal joint to 100 degrees. The right ring finger extended to 140 degrees at the metacarpophalangeal joint; the right middle finger to 150 degrees at the same joint; and the right index finger to 155 degrees at the same joint. The interphalangeal joints of the 3 radial fingers extended completely. The palm presented a hard, fixed mass palpable throughout the thickened palm from its base and into the little finger. It did not extend into the remaining fingers, but the entire breadth of the palm was depressed, deeply adherent, and severely involved at the distal palmar

crease. The mass involved the skin and there was blanching of the palmar skin on forced extension of the fingers. The left little finger could only be extended passively 1½ inches from palm to fingernail tip. The patient was just able to slip a lead pencil between the palm and the finger tip. The fifth metacarpophalangeal joint extended to 110 degrees and the proximal interphalangeal joint of this finger extended only to 110 degrees. The distal interphalangeal joints of all fingers extended completely. In the ring finger the metacarpophalangeal joint extended to 150 degrees, the interphalangeal joint extended completely, and the remaining 2 fingers extended completely. The contracture mass in the palm was almost identical to that of the right hand. There was more skin involvement at the base of the left little finger and linear cords were palpable immediately beneath the skin in both hands. The skin in the proximal finger segments of the little finger of both hands was shortened.

Intramuscular cortisone therapy was started on 5 January 1951, 100 mg. being given 3 times in the first 24 hours, twice the next day, and then 50 mg. twice daily. Cortisone was continued until 26 March but intramuscular injections were discontinued and starting on 8 February it was given by mouth. There were no symptoms attributable to the drug except transient dizziness which subsided spontaneously in a few days. The hands were observed and measured at frequent intervals. Although the patient noticed more improvement in the hands than was clinically evident, it was believed that there was some gradual improvement in the nutrition of the skin and some mobilization of the skin from the contracture mass. The right hand seemed to improve more rapidly than the left and this was the hand that was less severely involved when originally examined. Two months later the patient could extend the right fifth fingernail 2-1/8 inches from the palm. The metacarpophalangeal joint of the little finger extended 5 degrees more and the proximal interphalangeal joint extended 10 degrees more than at the original examination. It was believed that there had been some palmar softening and the deep sulcus representing the distal palmar crease had become more shallow.

On 9 March, under pneumatic tourniquet control, the contracture of the right hand was resected through a classical transverse distal palmar incision which curved on the ulnar side of the palm to extend to its base, the diseased fascia mass was resected en bloc distally, and the dissection was completed through a midlateral incision over the proximal half of the little finger. Dissection was very close beneath the skin on the ulnar half of the flap and there was questionable viability of this skin at completion of dissection. There was nothing unusual about the appearance of the palmar fascial mass. A small rubber drain was placed in the wound for 48 hours. The sutures were removed 11 days later. A small avascular area of skin that developed at the tip of the palmar flap required additional immobilization and pressure until the end of the third postoperative week. One month later there

was full extension in both metacarpophalangeal joints and the proximal interphalangeal joint of the little finger extended to 120 degrees. Limitation seemed to be the result of skin shortening. Cortisone was given throughout the postoperative period without interruption and there was no apparent delay in skin healing in the areas with good blood supply.



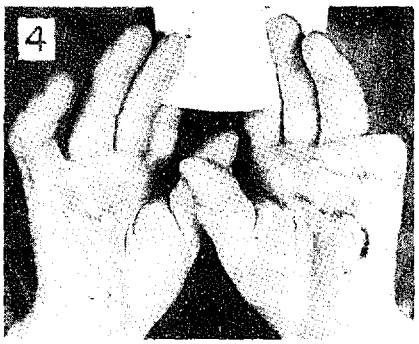


Figure 3 (case 2). Photograph taken on 5 January 1951 showing maximum extension of hands before treatment. Figure 4 (case 2). Photograph taken on 18 May 1951 showing postoperative condition of hands before cortisone therapy.

During this time, there was no appreciable change in the condition of the left hand. The metacarpophalangeal joint of the left little finger extended 1-7/8 inches from the palm, a 3/8-inch increase. The metacarpophalangeal joint extended to 120 degrees, an increase of 10 degrees, and the proximal interphalangeal joint extended to 110 degrees, which represented no change. On 29 March, 3 days after the cortisone was discontinued, the contracture mass was excised from the left hand in a similar manner. Again there was nothing unusual about the operative findings. The fascia was markedly contracted and was adherent proximally to the transverse carpal ligament and required excessive dissection of hypothenar and lumbrical muscle fascias and the mass extended well into the little finger. Again the dissection required leaving questionable skin at the border of the flap because of the involvement of the subcutaneous tissue. There was a small postoperative slough in the corner of the flap, about 2 by 10 mm. in size, which required prolonged immobilization and pressure dressing of the palm until the end of the third postoperative week. The area at that time was well crusted and clean and mobilization was gradually accomplished. The left palm remained greatly thickened with dusky circulation in the palmar flap. Marked induration persisted. Mobilization of the fingers was considered to be slow. Postoperative swelling, edema, and scarring were much more apparent in the left palm than in the right and no

increased extension at the metacarpophalangeal joint was observed beyond the immediate postoperative correction (fig. 4). On 18 May, 7 weeks after operation, cortisone therapy was reinstituted because of persistent induration and thickening of the left palm and stiff finger joints. Within 21 days there was an apparent improvement in the condition of the palm. The soft tissue could be moved freely in the palm. The edema subsided and the duskiness of impaired circulation in the palmar flap disappeared. Cortisone was given for 5 weeks at the end

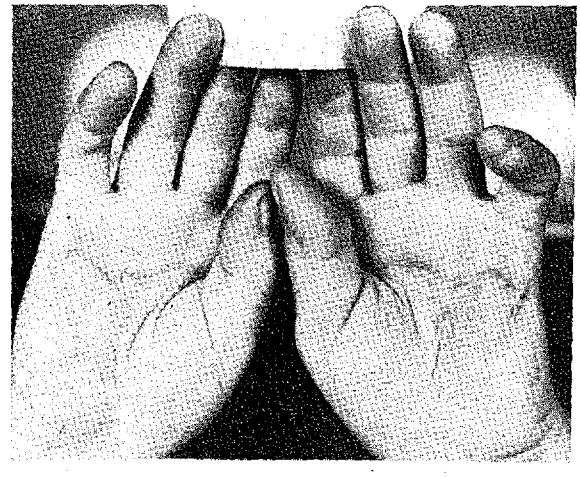


Figure 5 (case 2). Photograph taken on 24 July 1951 showing appearance of hands following postoperative cortisone therapy.

of which time the induration had almost completely subsided and the fingers were mobilized gradually. On 1 August all joints extended completely, except the proximal interphalangeal joints of both little fingers, the right extending to 140 degrees and the left to 130 degrees (fig. 5). The patient was pleased with the result, was conscious of continuing improvement, and thought that the fingers would be straight for all practical purposes in a few more months. He stated that he was able to wear gloves for the first time in 13 years.

Microscopic examination of the tissue from both palms revealed bundles of dense collagenous fibrous tissue with occasional flattened fibroblast nuclei. Between these bundles were small blood vessels surrounded by a scant lymphocytic infiltration. The pathologist believed that there were no atypical changes which would distinguish this tissue from tissue not treated with cortisone.

On 7 September the patient was considered ready for duty. The right fifth proximal interphalangeal joint extended to 140 degrees and the left fifth proximal interphalangeal joint extended to 135 degrees. The skin of the palm around the incisions was soft and movable. There was slight thickening at the corner of the ulnar flap on the left hand.

The sole block to full extension was the moderate tightness and shortening of the skin over the proximal finger segments of the little finger of both hands.

DISCUSSION

Case 1 is illustrative of Dupuytren's contracture treated by cortisone in a stage usually not seen by the physician, the contracture being of very short duration. It was my impression that the benefit from cortisone in this patient was more marked than seen in the fixed and late contractures of the second patient. This seems logical because the contracture process was not fully advanced and should be more susceptible to any blood-borne agent. The most striking result, however, was the beneficial result noted in the hand which had been operated on without previous cortisone therapy. The patient stated that range of motion through the finger joints in his other hand had markedly improved while under preoperative treatment for the hand not operated on. There was definite palpable change in the contracture mass, however, which is not easily discernible from photographs. On the basis of clinical impression only it was thought that the contracture was more easily resected as a result of cortisone therapy.

In case 2 the contracture was of many years' duration and responded much more slowly and much less objective improvement was noted. The skin healing apparently was not influenced by cortisone therapy during the postoperative period, and again the most striking benefits were related to the postoperative loosening of the finger joints. These severely contracted hands, which required extensive and radical resection, each complicated by delayed wound healing, mobilized much more rapidly than similar hands treated previously without cortisone.

In neither patient was there any untoward effects from using cortisone in the indicated dosages. Both patients stated that they were able to work longer hours without fatigue and had a general feeling of well-being, though not to the point of euphoria. One patient (case 2) complained of transient dizziness and restlessness during the early phase of his treatment but this subsided spontaneously. The other patient (case 1), during his course of preoperative cortisone therapy, brought to the examiner's attention the fact that a skin rash on his lower leg had completely cleared up. This rash had been present for about 15 years, had been repeatedly treated with little success by dermatologists, and was thought to be "stasic dermatitis." There was no recurrence of this rash during the period of observation, nearly 3 months after the cessation of cortisone therapy.

SUMMARY

Two patients with Dupuytren's contracture were treated with cortisone. One had an early disease process and the other very late and severe contractures. Cortisone appeared to be of limited value as a preoperative medication and probably of value only in the very early

stages of the disease. The benefits to the patient with severely contracted hands were minimal and did not seem to justify the prolonged treatment necessary to improve these hands only slightly before operation. There was definite evidence in our cases of the drug's value in the postoperative treatment of these hands and its use is believed justified because of the definite and marked improvement in the postoperative mobilization of the hand. There is no evidence that cortisone in itself will supplant the accepted methods of surgical resection of Dupuytren's contracture. It does, however, offer possibilities as a valuable adjunct in the postoperative rehabilitation of patients with Dupuytren's contracture.

BOOK REVIEW

Decompression Sickness, Caisson Sickness, Diver's and Flier's Bends and Related Syndromes, Compiled under the auspices of the *Subcommittee on Decompression Sickness, Committee on Aviation Medicine, Division of Medical Sciences, National Research Council,* Washington, D. C. 21 contributors. 437 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., publishers, 1951.

This book is a compilation of the work resulting from the requests of the U. S. Armed Forces to the National Research Council made in April 1942 to study the problem of decompression sickness as experienced by flying personnel. The direction given by the Chairman of the Division of Medical Sciences, National Research Council to the Subcommittee appointed to accomplish this study illustrates well the scope of the book: "The Subcommittee will be expected to study decompression sickness from a broad biological standpoint with the view of elucidating the factors involved in bubble formations in tissues and devising ways and means of minimizing the dangers arising from aeroembolism." The book contains the work of 21 investigators representing some of the foremost laboratories in this country interested in the problems of aviation, physiology, and medicine. No new major discoveries resulted, but the studies have added extensive and valuable quantitative data relative to the influence of exercise, age, degree of obesity, and environmental conditions on the incidence of symptoms. Many new details have been added to our knowledge of altitude sickness and denitrogenation has been established as an effective preventive measure in altitude decompression sickness. This book contains a wealth of information and will serve as an excellent supplement to the standard texts on aviation and submarine medicine. It will make a valuable addition to every Flight Surgeon's library.

—Col. W. D. Preston, U. S. A. F. (MC)