

DUPUYTREN'S CONTRACTURE: THE DORSAL TRANSPOSITION FLAP

STEWART H. HARRISON and ANN MORRIS, Slough

A follow-up survey has been carried out during the past twelve months, on a selection of those patients in whom a local transposition flap has been used in the surgical treatment of Dupuytren's Contracture. Thirty of the cases so treated over the period 1962-72 have been compared with a similar number of cases treated over the same ten-year period by excision of the Dupuytren's tissue only, and direct skin closure.

Although the introduction of normal skin and subcutaneous tissue by means of a dorsal transposition flap into the involved area may have no bearing on the incidence or rate of recurrence, it is our aim to show that it can guarantee freedom of recurrence in a localised area. If the flap is strategically placed in the region of the palmar-digital skin crease adjacent to the metacarpophalangeal joint of the involved digit, then optimal effective function of the finger and hand as a whole can be obtained.

AETIOLOGY AND PATHOLOGY

The condition of Dupuytren's Contracture, of still unproven aetiology, was described by Dupuytren in 1834 as a progressive contracture of the palmar aponeurosis generally affecting the ulnar aspect of the hand.

A recent report (Hueston, 1962) states that the characteristic palmar nodule lies in the subcutaneous fibro-fatty layer and is fixed to the longitudinal layer of the palmar aponeurosis, but is never seen to protrude through or onto its deeper transverse layer. Thus the condition of Dupuytren's Contracture may be secondary to changes arising in the fibro-fatty tissue on the superficial aspect of the palmar aponeurosis, rather than in the aponeurosis itself.

TABLE I

Patients in whom TRANSPOSITION FLAP performed	30
Number of flaps: 40—50% as PRIMARY PROCEDURE	
—50% for RECURRENT disease	40
Patients treated with excision of Dupuytren's tissue and DIRECT SKIN CLOSURE	30
TOTAL patients examined:	
Treated 1962-72 (10-year period)	60
Disease commenced as:	
PRIMARY DIGITAL INVOLVEMENT	50%
PALMAR NODULE	50%
Disease affecting:	
LITTLE FINGER	90%
LITTLE FINGER ALONE	45%
RING FINGER ALONE	10%
RING FINGER ALONE AT PRESENTATION	15%
PALMARIS LONGUS tendon absent unilaterally	10%
Cases with DUPUYTREN'S in hand where PALMARIS LONGUS absent	7%
AVERAGE AGE at presentation: 43 years in patients who were treated with transposed flap.	
OVERALL AVERAGE AGE: 58 years	
FAMILY HISTORY POSITIVE. Cases treated by transposed flaps	45%
OVERALL AVERAGE in series	23%
ECTOPIC LESIONS (Knuckle pads only in our series)	in 24%
BILATERAL DISEASE at presentation	60%
RECURRENCE RATE (2-10 years follow up): 40% overall in both sets of cases with recurrence most commonly in the digit rather than palm.	
RECURRENCE UNDER FLAP placed in area of palmar-digital skin crease	NIL

This theory has particular application when considering recurrence after excision of nodules and bands, and replacement of the subdermal fibro-fatty tissue included of necessity in the skin flaps. Prevention of that recurrence locally is possible by combining adequate excision of the Dupuytren's tissue with replacement of the involved skin by normal skin and subcutaneous tissue with a local transposition flap.

The original theory of trauma as a causative factor does not appear to be valid in the light of evidence related to the existence of an inherited factor. There is clinical evidence, however, that injury or infection can be a precipitating factor in persons with an inherited predisposition to Dupuytren's Contracture. It is for this reason that surgery in Dupuytren's Contracture should be specifically concerned with the correction of the contracture, as the condition itself is not curable by surgery. Some hands are made worse by surgery and the recurrence of the contracture is not only seen after the first operation but can recur again and again after surgery, which becomes progressively more difficult at each recurrence.

FOLLOW-UP

Arising from our follow-up series of sixty patients was the finding that the condition commenced primarily with digital involvement in 50% of cases and with palmar nodules in the other half of the patients. Although Dupuytren's is seen commonly as a palmar nodule, our findings show that patients whose disease commenced with digital involvement require surgical intervention to correct joint contracture.

The little finger was affected in nearly 90% of cases and the little finger alone in 45%, whereas the ring finger, which in some series is stated to be the most commonly affected finger, was involved alone in only 10% of cases, and the first finger to be affected in 15% of patients only.

The palmaris longus tendon was absent unilaterally in 10%, and of these 7% had Dupuytren's Contracture involving the hand in which the palmaris was absent clinically.

Indications for Operation with Transposition Flap

In our unit the patients chosen for local transposition flap had been those in whom:

(1) Surgical intervention is warranted for joint contracture and digital involvement with consequent disability, in whom there is also clinical evidence of skin involvement. In all thirty cases reviewed, the skin of the distal palm and digit had been clinically involved at initial presentation.

(2) The transposition flap is also used as a prophylactic measure in those patients who statistically are likely to suffer from recurrence of the contracture. These patients include the young patient with a positive family history, bilateral disease, ectopic lesions such as knuckle-pads, or plantar lesions. Local features include those patients with primary digital involvement only at first presentation.

(3) The flap is used for patients who come to operation with recurrence and particularly with fixed flexion deformities of the proximal interphalangeal joint, which require stabilisation in a more functional position.

The Technique for the Use of the Dorsal Transposition Flap

(Fig. 1—Pre-operative view of hand): An incision is made along the mid-lateral line of the finger and this incision then passes transversely across the

proximal crease of the finger and ascends proximally in a zig-zag manner into the palm (see Fig. 2). A flap is elevated from the dorsum of the finger extending distally as far as the head of the proximal phalanx (Fig. 3). This is transposed into a space created by the transverse incision into the proximal crease (Fig. 4). It should be noted that the incision should extend across the proximal crease into the fourth cleft. If the proximal interphalangeal joint has a fixed flexion deformity with a subluxation present, it is unlikely that mobility can be regained by surgical procedure. In those cases in which this is attempted, a recurrence of the deformity is not infrequent. It is therefore considered desirable in such cases to stabilise the proximal interphalangeal joint in an acceptable angle compatible with good function. The method of stabilisation used is by the introduction of an angled Harrison-Nicolle Intramedullary Peg (see Fig. 5). Finally, a free graft from the forearm is used to cover the secondary defect on the back of the finger and the hand is immobilised for a period of fourteen days.

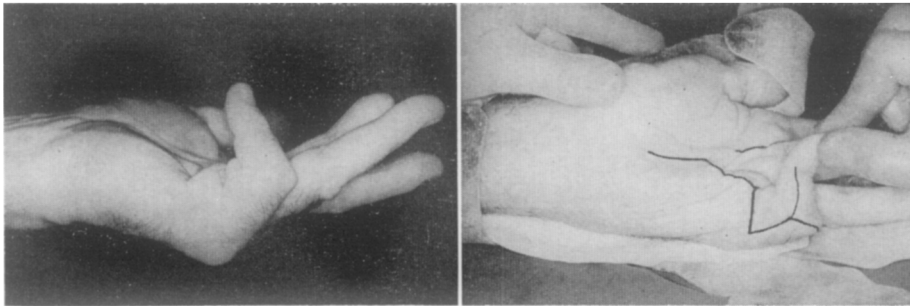


Fig. 1. Pre-operative view.
Fig. 2. Incisions in palm.

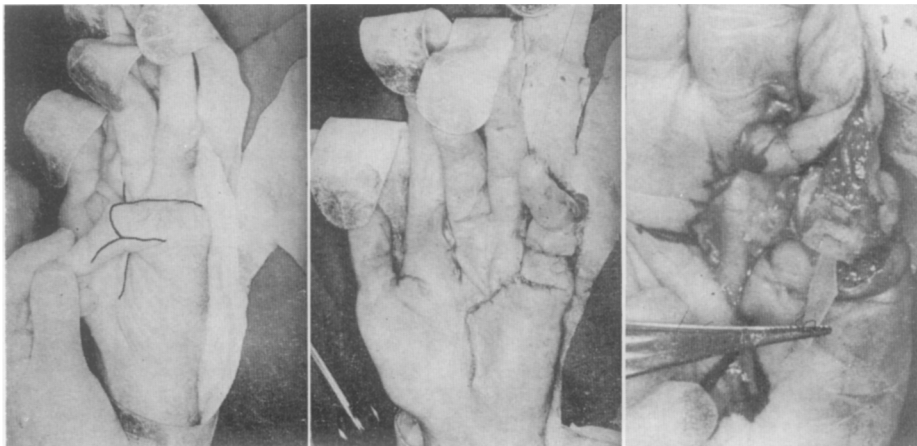


Fig. 3. Incision on dorsal surface.
Fig. 4. Transposition of flap.
Fig. 5. Stabilisation of proximal interphalangeal joint with Harrison-Nicolle peg.

In the thirty cases examined, a total of forty transposition flaps has been performed, approximately half of these for recurrent disease and half as a primary procedure. There was an overall recurrence rate of 40% and this was comparable with that seen in the control series and other large series. Recurrence occurred more commonly in the finger than in the palm, but in none of the cases in which transposition flaps were used was there any sign of recurrence under the flap itself. Contracture in this area, therefore, was avoided and function maintained.

CONCLUSION

The rationale of this method of management is that the introduction of normal skin and subcutaneous tissue from the dorsum of the digit, inserted transversely across the proximal crease, separates the involved palmar and digital skin of the region and acts as a break in the continuity of recurrence, thus allowing normal metacarpophalangeal joint movement. The reason for introducing flap cover to the region of the proximal skin crease of the digit is that in Dupuytren's Contracture the metacarpophalangeal joint is not directly involved. Consequently, deep clearance of the Dupuytren's tissue can be obtained and normal function of the joint maintained by the introduction of normal skin over it. Hyper-extension of the metacarpophalangeal joint compensates for flexion deformity of the proximal interphalangeal joint and allows the pulp of the finger to lie in the transverse plane of the other fingers. The little finger with its set of hypothenar muscles is essential to the function of the hand, and should never be amputated if there is any prospect of saving it. This has become possible by the use of a transposition flap combined with the introduction of the Harrison-Nicolle Intramedullary Peg which can effectively stabilise the proximal interphalangeal joint in a position of function.

Grafting of the palm with free grafts has been recommended by Hueston in 1962 and by Conway in 1954. The cross-finger flap has been recommended by Moberg (1973). These methods, however, relate to the replacement of affected skin only in recurrent disease (Hueston, 1962).

In this presentation emphasis is laid on the relative freedom of involvement of the metacarpophalangeal joint itself and the fact that as the contracture of the joint is due to soft tissue involvement, replacement by a skin flap accurately placed will prevent recurrence and allow a normal range of movement of this joint.

Finally, it has been our practice for many years to rate the functional value of the little finger as second to that of the thumb, and its preservation should be of first importance. The method here described of using a flap and a peg for arthrodesis has proved satisfactory. Moberg (1973) makes a similar plea for avoiding amputation by both flap cover and arthrodesis in which he uses wedge osteotomy with shortening of the proximal phalanx.

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