THE OPEN PALM TECHNIQUE IN THE TREATMENT OF DUPUYTREN'S DISEASE

H. COOLS, J. VERSTREKEN

Twenty-eight patients (33 hands) were reviewed an average 2.5 years after an open palm technique combined with partial fasciectomy for the correction of Dupuytren's disease. They were assessed by diathesis evaluation and Tubiana's score. Results show a recurrence rate of 33.5% (3% severe), an extension rate of 51.5% and an overall complication rate of 21% without reflex sympathetic dystrophy. Fifteen percent and 12% had an important deficit in flexion and extension respectively. These findings are comparable to those found in the literature.

Keywords : Dupuytren's disease ; open palm technique.
Mots-clés : Maladie de Dupuytren ; technique de la «paume ouverte».

INTRODUCTION

The history of the open palm technique (OPT) goes back to the early days of Baron Guillaume Dupuytren in 1831 (2). He performed a fasciotomy through a transverse incision in a skin crease and left the wound open. The patient received an extension splint for 4 weeks. The contemporary technique was originally designed by McCash (10). He combined incisions in the distal palmar crease (DPC), the thenar crease and the palmar finger creases at the base and proximal interphalangeal joint (PIP) with a partial fasciectomy (FE), with closure of all but the wound in the DPC, and a postoperative extension splint for 1 week. Since then the technique has undergone modifications by other surgeons regarding the incision, dissection, closure of the finger wounds and after care.

The rationale of this study is the fact that according to McFarlane and Botz (12) wound closure influences the result of surgery for Dupuytren's disease (DD) more than the type of incision or FE. On the other hand, recurrence is not thought to be influenced by operation, but is determined by the diathesis (6) and influences the long-term postoperative results (17). Therefore, we try mainly to improve short-term function and to lessen complications.

The objective of this study is to evaluate the OPT and to compare the results with those found in the literature.

MATERIALS AND METHODS

We obtained retrospectively the records of 167 patients operated for DD between the years 1987 and 1992 ; 33 (20%), all caucasians, underwent an OPT. They were evaluated by a mailed questionnaire and invited for clinical examination and review of the questionnaire. One patient could not be traced, two declined and two had died. This resulted in a group of 28 patients (33 hands), three women (five hands) and 25 men (28 hands), with a mean time to follow-up (FU) of 2.5 years. The mean age at operation was 64 years ; 64.5 (range 42-78) for the men and 60.2 (range 56-65) for the women. The age at onset of DD ranged from 33 to 68 years. The period between onset and the first complaint ranged from less than 1 to 10 years, between the first complaint and the operation from less than 1 to 22 years and between onset and operation from 1 to 32 years.

All operations were performed by or under supervision of the same surgeon (J. V.) on a short-stay basis (usually 1 day). Regional or general anesthesia was used, depending on the patient's wishes and general

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condition and the severity of DD. A transverse incision was made in the DPC, when needed with radial extension over the full palmar breadth to the proximal palmar crease, and digital and proximal palmar zigzag (Bruner) incisions branched onto it (fig. 1). A limited palmar FE and a more extensive one in the finger were performed to avoid recurrence from the retrovascular cord (11). Skin closure was achieved by suturing the proximal and distal wounds with the fingers in maximal passive extension with the transverse palm wound left open. If skin edges did not lie flat, especially if there were thin skin curls, they were loosely tacked down with sutures (10). Hemostasis was achieved after cuff release by pressure without ligatures. The dressing consisted of one layer of tulle gras and a pressure dressing in a volar plaster slab with the fingers in maximal extension. The arm was elevated in a sling. After 1 day the dressing was changed, and active and passive movements were started. The patient exercised two to four times a day. After satisfactory movement was obtained exercises together with local massage were continued to make the scar supple. Dressings were changed regularly to check for skin necrosis and infection. In our experience healing occurred in 3 to 5 weeks.

RESULTS

Tables I and II show the findings with respect to prognostic factors and postoperative evaluation. We considered the diathesis, an inherited

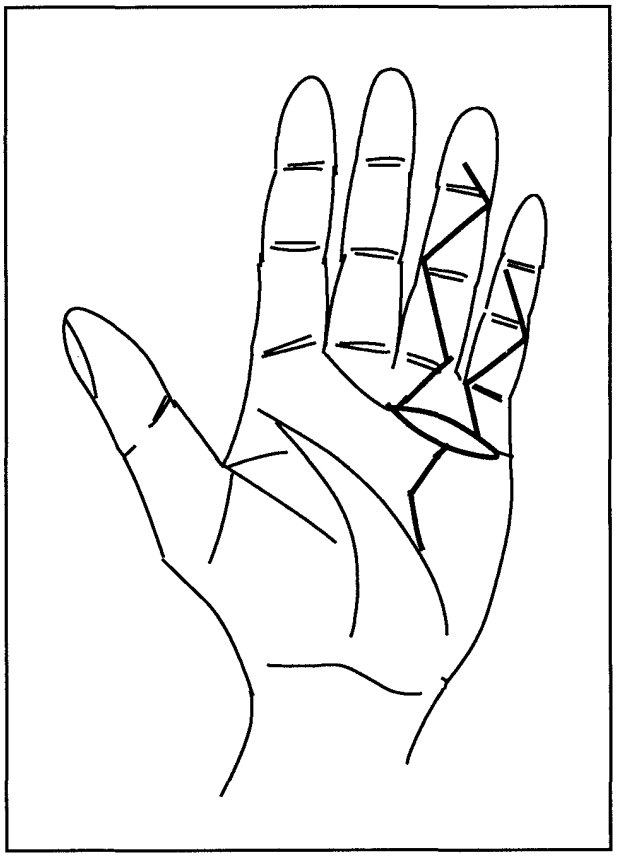

Fig. 1. — Incisions of the open palm technique.

Table I. — Prognostic factors in Dupuytren's disease

Patient (N = 28)	No	%	Hand (N = 33)	No	%
Family history	9	32	Recurrence soon after FE (14)	2	6
Early onset (age < 40)	2	7	Involvement of PIP (7)	20	60.5
Bilateral involvement	21	75	Ulnar involvement (13)	33	100
Diabetes mellitus	2	7	5th ray involvement (7)	26	79
Epilepsy	0	0	Radial involvement (7)	6	18
Cardiovascular disease	4	14.5	Polydigital (7)	22	66.5
Smoking[1]	15	53.5			
Alcohol consumption[2]	18	64.5			
Ectopic disease	7	25			
Knuckle pad	5	18			
Plantar nodule	2	7			
Weak diathesis	7	25			
Moderate diathesis	5	18			
Strong diathesis	16	57			

[1] Another 6 (21.5%) stopped.
[2] 5 (15%) > 2 glasses a day.

Table II. — Postoperative evaluation

Objective	No	%	Subjective	No	%
Severe Tubiana's score[1]	5	15	Overall satisfaction	25	76
Extension deficit 2,3,4/1[2]	4/19	12/57.5	Prepared to let reoperate	24	72.5
Flexion deficit 4[3]	5	15	After care satisfaction	28	85
FROM[4]	9	27.5	Complication	9	27.5
Recurrence/severe	11/1	33.5/3			
Extension	17	51.5			
Overall complication rate	7	21			

[1] Severe : = or > 8 ; < 8, but 1 ray coded 4.
[2] Extension deficit of a digit : 1 = 1-45°, 2 = 46-90°, 3 = 91-135°, 4 = 136-180° (16).
[3] Flexion deficit of a digit represented by the distance between the fingertip and the distal palmar crease : 1 = 1 cm, 2 = 1-2 cm, 3 = 2-3 cm, 4 = > 3 cm (16).
[4] FROM = full range of movement.

tendency to DD (4, 5), as the overall prognostic factor with three grades depending on the nature and amount of the contributing factors listed in table I. Strong factors are a positive family history, early onset and ectopic disease, i.e. knuckle pad and plantar nodules. A strong diathesis means rapid progress and high risk of postfasciectomy recurrence (6). To draw a global picture of the postoperative state of the patient we calculated Tubiana's score (T) (16) (table II, fig. 3). A part of this score which we modified, illustrates the function, i.e. flexion and extension of the digits in different grades of deficit, and indicates the affected joints. Recurrence is defined as new DD within, extension as new DD outside, the operated field (6). We compared these results with the diathesis (figs. 2-6). The proportions of patients with recurrences to the total numbers of patients with a certain prognostic factor (PF) are as follows : family history : 4/9 ; early onset (EO) : 1/2 ; bilateral involvement : 9/21 ; associated disease : 1/6 for diabetes and cardiovascular disease, 10/21 for smoking and 8/18 for alcohol consumption, 3/5 for more than two glasses a day ; ectopic disease (ED) : 4/7 (one combined with EO) ; recurrence postfasciectomy : 1/2 (one combined with ED). The complications noted in seven patients were prolonged pain (more than 2 months), tenosynovitis, hypoesthesia around the scar and of the tip of the little finger, hyperesthetic scar with clinodactyly of the metacarpophalangeal joint (MP) of the little finger and hypoesthesia due to nerve laceration of the fourth digitalis communis and two cases of delayed healing of the wound (0.5 and 1 year) due to skin necrosis and infection. Three of them (9%) were persistent. There were no hematomas or reflex sympathetic dystrophy (RSD). Eight patients (24%) were generally dissatisfied because of "the return of the disease, the inability to use the hand properly or the poor sensitivity of the skin". Two of them were nevertheless prepared to undergo reoperation. Other reasons for three patients (9%) to refuse reoperation were finding him- or herself too old and the lack of the need of a fully functional hand. Complications according to nine patients (27.5%) were "pain at rest or with motion, decreased sensitivity of the skin, wound staying open too long and finger stiffness".

DISCUSSION

First, we realize the shortcomings of a retrospective study. The response to the invitation however was fairly high : 28/33 (85%). Secondly, Moermans (13) finds no statistically significant association between the risk of recurrence and sex, family history, associated disease, age and preoperative extension deficit. The most important prognostic factor according to him is the operative improvement : contractures not fully corrected have a worse prognosis. Clearly, the numbers of

recurrences we found for each PF are too small for statistical evaluation, but no isolated PF seems to correlate highly with recurrence. These findings somewhat contradict our use of the diathesis as a preoperative evaluation. Ling (8) affirmed the unreliability of a negative family history. This prognostic factor as part of the diathesis may thus be underestimated in this study.

We noted all the recurrences including the minor ones with only slight contracture.

Figure 2 shows a majority of all the cases (25/33 hands) and of those with a strong or moderate diathesis (19/26 hands) having fairly good function ($E < 45°$ and full range of movement (FROM)). One case appears twice ($E > 45°$ and $F > 3$ cm). There seems to be better function for a lower diathesis. In fig. 3, 26 of 33 hands have a T less than 4. The majority however have a T of 1 to 3.5, which is rather high due to the inclusion of nodules with little or no functional impairment. Again we find a lower T for a lower diathesis. Five hands (15%), among them one with a recurrence and extension of the disease and another with extension alone, had a severe T. They showed rather good finger extension, but poor flexion due to lack of postoperative exercises. The cases without recurrence (fig. 6) have better function than those with recurrence, who in turn have a strong diathesis (fig. 4). Also the patients with extension mainly have a strong diathesis (fig. 5).

A common criticism of the OPT is the risk of hypertrophic scar formation. We have not seen this complication, although we did not use silastics.

According to Wulle (18) the periods of treatment and work incapacity are not prolonged by the open wound. We did not study this item, but two patients had delayed healing due to necrosis and infection.

As Moermans (13) already stressed, true comparison of different studies is impossible since follow-up periods differ. We nevertheless show the results of several studies on the OPT in table III. Allieu (1) operated on 18% with OPT in a study of 900 hands with Dupuytren's disease, a proportion close to our 20% of a much smaller number. This is a minority of the Dupuytren population, restricted by indication. The absence of hematoma and smaller risk of edema and RSD with the OPT

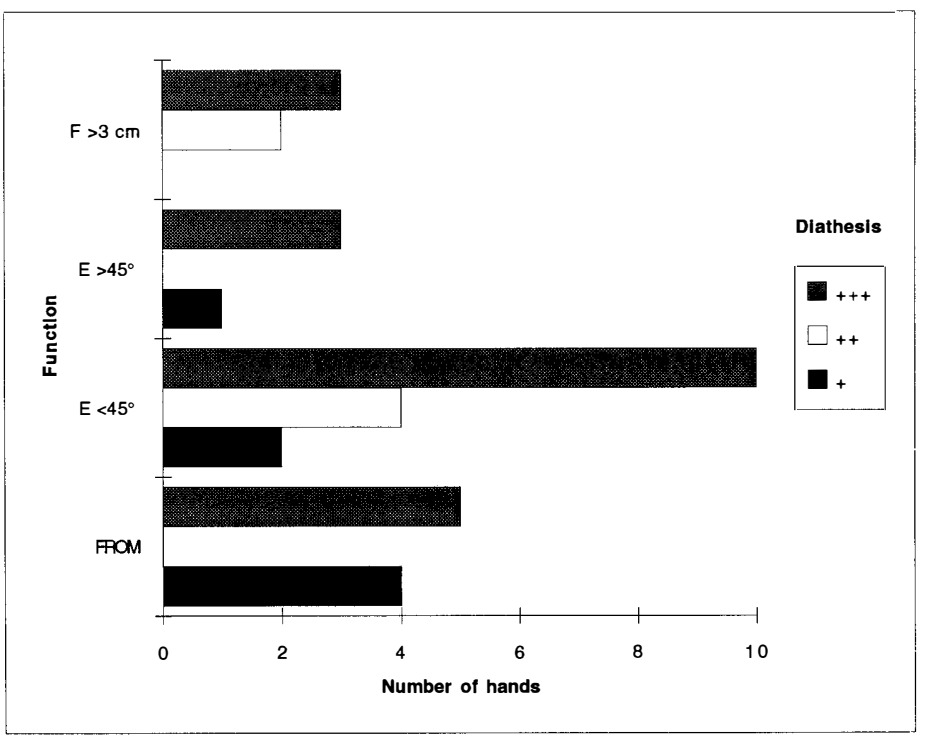

Fig. 2. — Function versus diathesis.

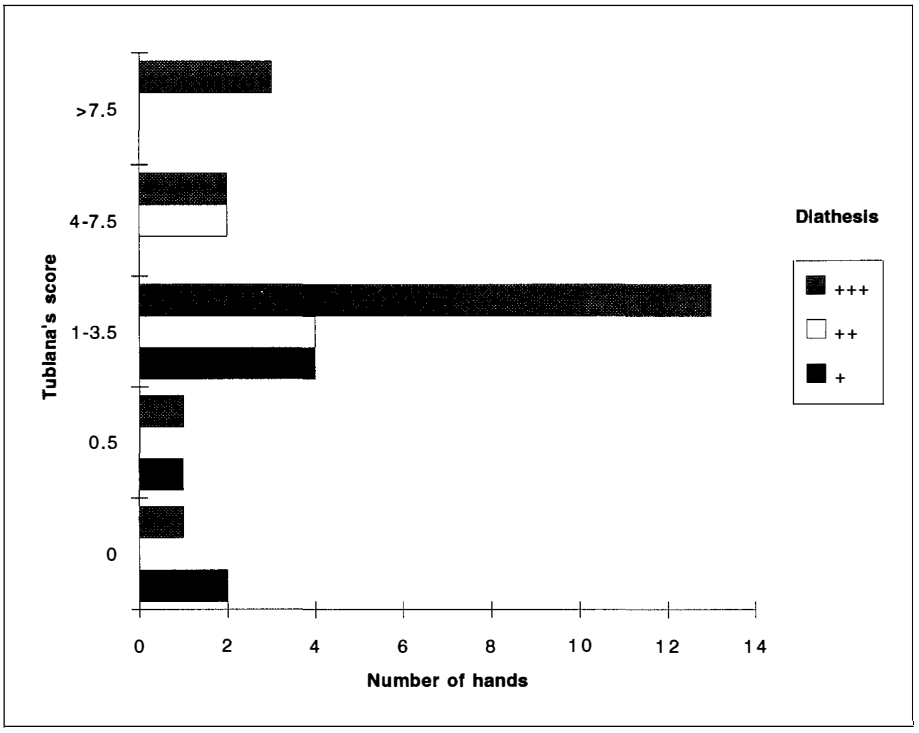

Fig. 3. — Tubiana's score versus diathesis.

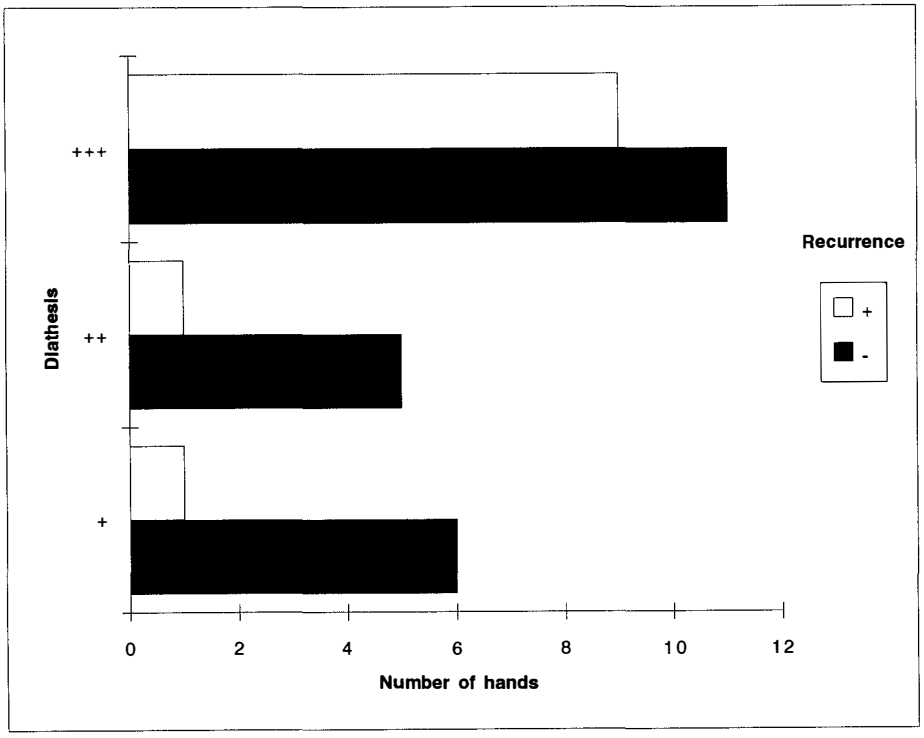

Fig. 4. — Recurrence versus diathesis.

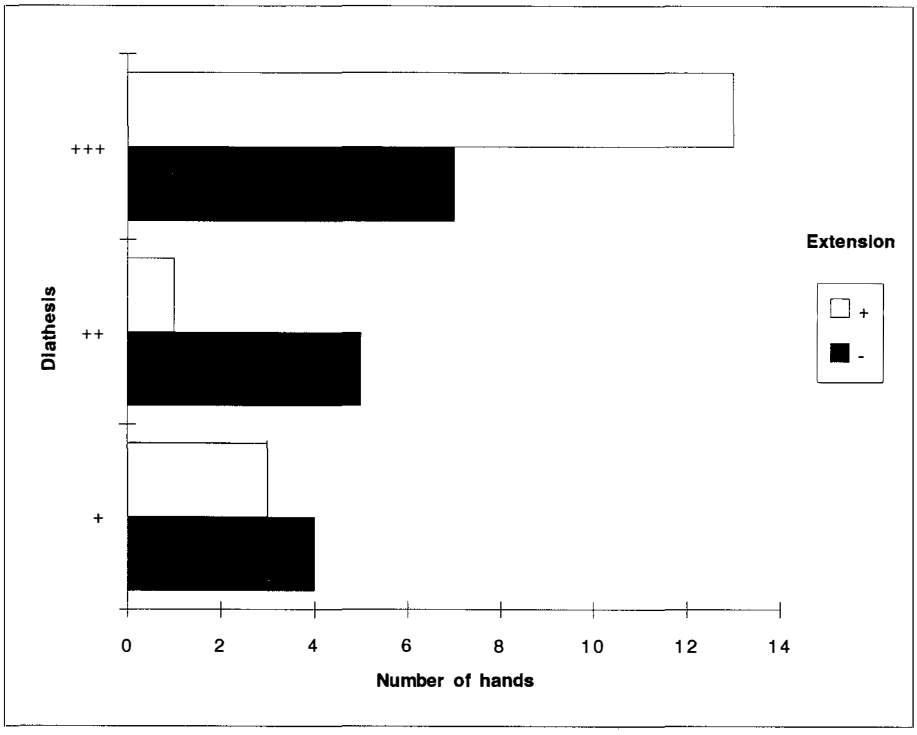

Fig. 5. — Extension versus diathesis.

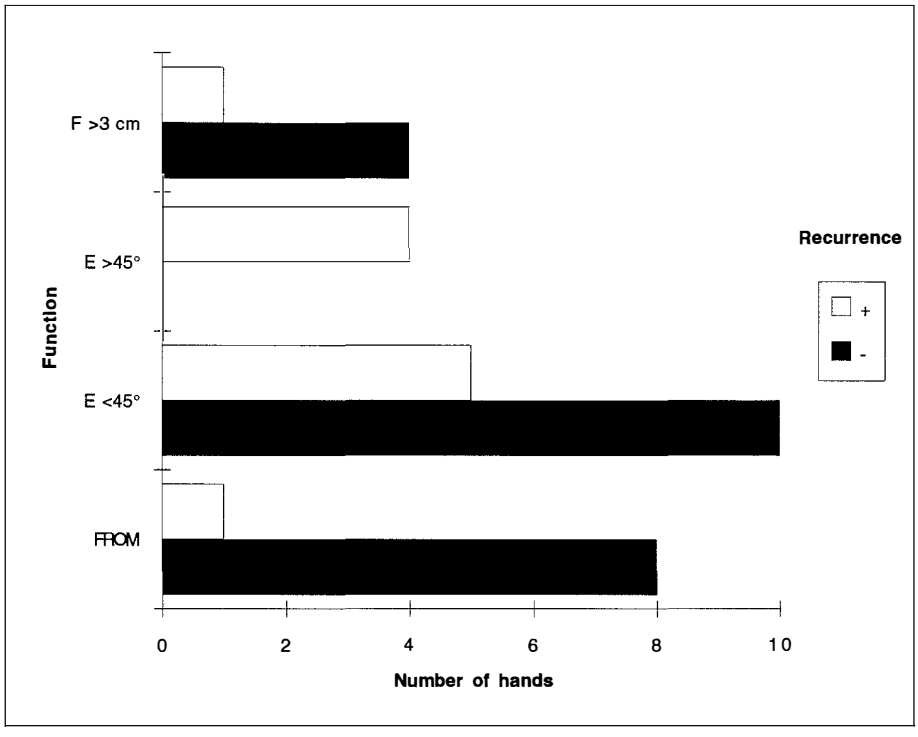

Fig. 6. — Function versus recurrence.

Table III. — Results of different studies on the open palm technique

% of hands[1]	Mc Cash 1964[3] (10)	Tubiana 1967 (17)	Lubahn *et al.* 1984[4] (9)	Schneider 1986[6] (15)	Allieu 1988 (1)	Wulle 1991 (18)	Foucher *et al.* 1992[9] (3)	Our results[12]
Overall complication rate			8/19					21 9[13]
Nerve laceration		10		10	3.6			3
Hematoma	0		0	0	0	0	0	0
Skin necrosis		5		0	DIGIT 8	0	0	6
Infection				0		0	0	6
RSD[2]			0	12	5.5 8.5[8]	0		0
Late motion	95.5 good		20/42[5]	41[7]			74°[10] 31°[11]	E[14] 57.5/12 F : 15 FROM : 27.5
Recurrence				32	30 DIGIT : 26		41 23 severe	33.5 3 severe

[1] If not stated otherwise.
[2] RSD = reflex sympathetic dystrophy.
[3] 43 hands.
[4] 153 patients, 47 hands OPT (O) vs 131 hands closed wound method (modified Skoog incision) (C) ; [5] Residual contracture.
[6] 49 hands ; [7] flexion deficit at 5 year follow-up (FU).
[8] PRE-RSD.
[9] 107 patients ; [10] average improvement in 83.5% of digits in 54 patients, average FU 5.6 years ; [11] average lack of extension in 16.5%.
[12] Skin necrosis and infection in same patients ; [13] persistent ; [14] E = extension deficit < or =/> 45° ; F = flexion deficit > 3 cm ; 3% overlap of F and E > 45° ; FROM = full range of movement.

are well known, but the rather high recurrence rate (33.5%) is also confirmed and will probably rise with a longer FU period.

CONCLUSION

It is important to have the right indication for the OPT, i.e. especially intraoperatively, to allow closure of the other wounds without tension. The patient must be able to cooperate in the after care. This means that the OPT is not a routine technique.

We obtained results comparable to those of other studies : good short-term function and an acceptable complication rate.

If used in patients with a strong diathesis, one has to realize that good function will get worse.

There could be some discussion about the correlation between the classical diathetical factors and recurrence. We did find however a correlation between function, Tubiana's score, recurrence and extension on one hand and the diathesis on the other.

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SAMENVATTING

H. COOLS, J. VERSTREKEN. Open palm techniek bij de behandeling van de ziekte van Dupuytren.

Achtentwinting patiënten (33 handen) werden nagekeken gemiddeld 2.5 jaar na een open palm techniek gecombineerd met een partiële fasciëctomie als behandeling voor de ziekte van Dupuytren. Ze werden geëvalueerd d.m.v. de diathese en de Tubiana-skore. Het aantal recidieven bedroeg 33.5%, waarvan 3% ernstig, het aantal extensies 54.5% en het globale aantal komplikaties 21%, zonder reflexogene sympatische dystrophie. Vijftien % en 12% had een balangrijke flexie- respektievelijk extensiebeperking. Deze bevindingen zijn vergelijkbaar met deze in de literatuur.

RÉSUMÉ

H. COOLS, J. VERSTREKEN. Technique de la paume ouverte dans la traitement de la maladie de Dupuytren.

Vingt-huit patients (33 mains), opérés de maladie de Dupuytren, ont été revus avec un recul de deux ans et demi. Tous ont été traités par fasciectomie palmaire partielle selon la technique de la «paume ouverte». L'évaluation a tenu compte des prédispositions étiopathologiques et de la classification de Tubiana. Les récidives représentent 33.5% dont 3% de graves. Cinquante-quatre pour cent et demi des patients présentent une progression de la maladie en aval du site opéré. Les complications globales se chiffrent à 21%, sans algodystrophie. Quinze pour cent des patients ont une limitation importante de flexion et 12% d'extension. Ces résultats sont comparables à ceux de la littérature.