R. M. McFarlane, J. S. Botz and H. Cheung

20 Epidemiology of surgical patients

Much has been written about Dupuytren's disease (DD) and many opinions have been expressed, often on the basis of a single case. Unfounded opinions and anecdotal information pervade the literature. In an attempt to obtain more objective data the committee on DD of the International Federation of Societies for Surgery of the Hand undertook an epidemiological study by seeking patient information from surgeons around the world.

A SURVEY OF SURGICAL PATIENTS

The study population consisted of 1150 patients with DD who consulted a surgeon specifically about the disease in their hands. The goal was to correlate, from these patients, epidemiological and surgical factors which affect outcome. Thus the investigation was an attempt to correct misconceptions as well as to confirm opinions by the presentation of objective data. A questionnaire was designed to collect information on four aspects of DD — the patient; the operation; the result of the operation and the long-term result of treatment in terms of recurrence and extension of disease. Preliminary results of this study have been published (McFarlane 1983, 1985).

Patients with DD who consult a surgeon do not necessarily reflect the features of this disease in the general population where many people have minimal disease, elderly patients often have it without their knowledge, and others are content to accept contracture or have been advised not to have an operation. Brouet (1986) reported that in his series of 1014 patients, 496 were operated upon, of whom 11% were women, whereas 518 were not operated upon, of whom 36% were women. Thus it would appear that women are more inclined to accept contracture or that their contracture is not as severe.

In groups of patients with primary diseases such as diabetes, epilepsy or alcoholism, the related incidence of DD is high but these patients do not necessarily seek surgical intervention for their hand contractures. The following analysis considers only those patients who were seen by a surgeon and in most instances were operated upon. They are representative of the more severe type of disease.

Racial origin and family history

It has been assumed, especially since the study of Ling (1963), that DD is genetically transmitted. By implication Hueston has suggested that it is a disease of the Celtic race, or perhaps originated with the Vikings, because the prevalence of DD coincides with the early migrations of these people. Clearly it is very common in northern Europe, less common in southern Europe (Brouet 1986) and South America (Davis 1965) and rare in Africa. It is said to occur in India but there are no reports in the literature. (However there is one east Indian patient in this study who was operated upon in England.) It is not uncommon in Japan, as documented by Egawa (1985; Egawa et al 1985) and Morinaga et al (1979) and discussed further in Chapter 21. The 12 Chinese patients included in this study were retrieved with difficulty from the records of five large hospitals in five different provinces in China (Wang, personal communi-

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cation). Chow et al (1984), reporting DD in 3 patients, stated that it was extremely uncommon in the Chinese people. Tui (personal communication) has collected some 30 cases over a period of 20 years in Taiwan. Mennen (1986; Mennen & Grabe 1979) has documented its existence in black Africans; Furnas (1979) reported a single case in a black African.

Table 20.1 shows the country of origin and racial or family origin of 1150 patients, as documented by questionnaire. Most descended from northern European stock, very few from southern Europe. Of special interest is the number of Japanese and Chinese patients. This does not reflect so much the frequency of DD in Orientals as the co-operation of the surgeons in those countries; however it does emphasize that DD is not rare in Orientals. The features of all of these patients as well as the involvement of their hands and the type of operation performed are shown in Profile A at the end of this chapter.

On the assumption that northern Europeans have typical disease, this group was further refined by removing patients who had a previous operation, and thus had recurrent disease. This created a group of 670 patients of northern European descent who had not previously been operated upon. The features of this group are shown in Profile B and form the basis for comparison with other groups. For instance, in Profile C the characteristics of southern European patients are documented. There were only 27 patients so statistical analysis is of doubtful value but there were more males and less bilateral disease. One would expect the extent of hand involvement to be less, yet three or more rays were more often involved and radial side disease (thumb and index finger) was more frequent than in northern Europeans.

Table 20.1 Country and family of origin of 1150 surgical patients, as documented by questionnaire

Country of origin	*n*	Family origin	*n*	%
Australia	37	Northern Europe	865	83
Belgium	37	Southern Europe	27	3
Canada	294	Japanese	126	12
China	12	Chinese	12	1
France	118	Black American	9	1
Japan	128	Black African	5	0.5
Mexico	2	American Indian	2	0.2
South Africa	12	Indian	1	0.1
Sweden	13			
UK	50			
USA	339			
West Germany	108			

ANALYSIS OF PROFILES A AND B

As shown in Profiles A and B the sex ratio of 83 males to 17 females is similar to other surgical series. More women are operated upon as age increases (Fig. 20.1). Most patients had disease in both hands but when the disease was unilateral the right hand was involved almost twice as often as the left. This observation suggests that use of the hand or injury may play a role in the development of disease. Only half of the patients were manual workers, which is at variance with Mikkelson's observation in a general population (1972, 1978; see Chapter 19). The age difference between males and females both at onset of disease and at operation is statistically significant ($p<0.001$*). A family history of 29%, taken by a surgeon on a single visit, is highly suggestive of a familial disease. In Ling's (1963) study the prevalence of family history rose from 16 to 68% when he sought out and examined close family members.

The involvement of other areas is a strong diathesis factor. Knuckle pads are most common but clinically it is often difficult to be certain whether or not they are present so the recorded incidence may be incorrect. Plantar fibromatosis is easy to diagnose. Penile fibromatosis is not often associated with DD. All three areas were involved in only 9 patients.

Associated diseases

The fact that DD is associated with other diseases should suggest some common pathway of aetiology or pathogenesis. To date, this has not been revealed. In the past gout and pulmonary tuberculosis were mentioned but from this study there is no evidence that cardiopulmonary disease and

* Statistical methodology consisted of the two-sample Student's t-test for differences between continuous variables and the chi-squared test for differences between categorical variables (Snedecor & Cochran 1967).

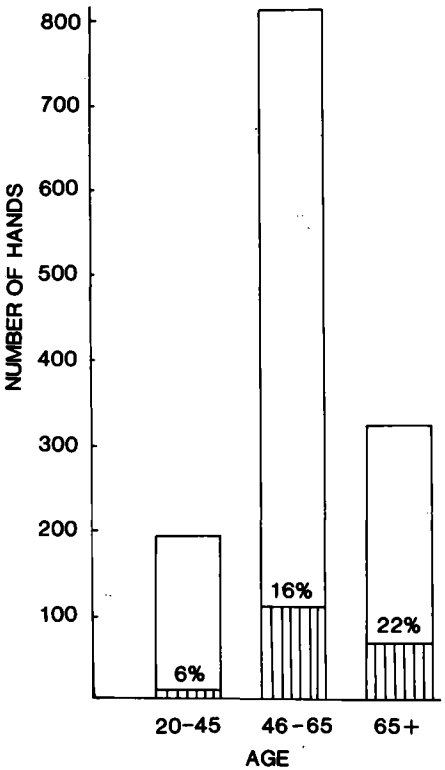

Fig. 20.1 Ratio of males (□) to females (▥) by age at operation. $p < 0.01$.

hypertension or any type of arthritis are related to DD. It is unheard of in leprosy, a disease that destroys collagen and elastin (Enna, personal communication).

The incidence of epilepsy in various countries varies from 0.2 to 0.8% (Laidlaw & Richens 1982). The incidence of epilepsy in these surgical patients was about 3%, or approximately 6 times greater than in the general population (Profiles A and B; Table 20.3). DD was seen in both idiopathic and acquired epilepsy in this study so the association with barbiturate medication is highly suspect, as suggested by Critchley et al (1976). The features of 37 epileptic patients are shown in Profile D. There is more bilateral disease, other areas are more frequently involved, the age at onset and operation is earlier in both males and females and 43% had a previous operation. Also 50% of the epileptic group had three or more rays involved, compared to the non-epileptic group ($p<0.01$) and the incidence of disease on the radial side of the hand was also greater ($p<0.02$). Therefore the type of operation performed in this group was extensive. More skin grafts were used in the palm and more proximal interphalangeal joint procedures were performed. The results of treatment, although not shown, were similar to those in the group as a whole. Clearly the extent of disease is more severe and the course of disease is more aggressive in the epileptic population. This suggests an increased diathesis, discussed in chapter 22. This increased diathesis could be genetic or brought on by barbiturate medication.

Table 20.2 Hand profile by country (percentage)

	USA	Canada	France	Japan	West Germany	UK	Australia
Bilateral	45	78	72	73	82	48	78
Palm only	6	5	5	6	0	4	9
No palm	9	4	0	3	16	4	7
One ray	33	30	36	29	36	50	40
Three or more rays	26	37	33	30	29	16	25
Little finger	70	69	73	75	70	70	67
Ring finger	67	63	56	72	62	36	51
Middle finger	30	34	31	31	41	22	21
Index finger	9	13	20	11	13	2	12
Thumb	18	36	26	12	19	12	35

Concerning diabetes mellitus, quite a different impression is gained if one examines a group of DD patients or a group of diabetic patients. In Profile A and Table 20.3 the prevalence of diabetes is the expected rate for this age group of patients. However in patients attending a diabetic clinic, where the prevalence of DD is higher than in non-diabetics, the duration of the diabetes rather than its severity or insulin dependence is thought to be the contributing factor (Spring et al 1970; Malins 1972; Lawson et al 1983; Crisp & Heathcoate 1984; Noble et al 1984).

The criteria for the diagnosis of diabetes are beyond the scope of this discussion, other than to say that diagnosis cannot be made from a single clinical feature or laboratory test. Likewise, the diagnosis of Dupuytren's disease is uncertain in its early stages; in the diabetic patient limited joint mobility and trigger finger may be mistaken for DD. Because of the margin of error in the diagnosis of both diseases it is difficult to evaluate their association but in Chapter 23 convincing evidence is presented of an association between DD and diabetes. As shown in Profile E, some features of the diabetic patient who comes to operation differ from those of the non-diabetic group. There are proportionally fewer northern Europeans ($p<0.025$) and more Japanese patients ($p<0.005$) with diabetes. This is probably due to the predominance of males in both groups. Diabetes is more common in European females than males, but it is more common in Japanese males. (Rudnick & Anderson 1962; Wada et al 1964; Zimmet 1983; Keen & Ekde 1984). Thus these differences are related more to diabetes than to DD. However, there are more alcoholics in the diabetic group ($p<0.025$) and more bilateral disease ($p<0.05$). These are features of DD which suggest a relationship — albeit tenuous — between the two diseases.

The diagnosis of alcoholism by a surgeon is subjective. A prevalence of 10% in the general population is not high. According to Table 20.3 the prevalence by country varied from 2 to 15%. Bradlow & Mowat (1986) suggest that a daily alcohol intake of 40 g is indicative of a heavy drinker. They reported that 23% of 64 patients operated for DD were heavy drinkers. If an association does exist, the question must be answered whether DD is the result of liver damage caused by increased intake of alcohol, the result of the direct action of alcohol on the fascia, or whether two diseases are genetically related.

The features of the alcoholic patients listed in Profile F suggest a genetic or some fundamental association between alcoholism and DD. When

Table 20.3 Patient profile by country (percentage)

	USA	Canada	France	Japan	West Germany	UK	Australia
Northern European	89	98	95	0	100	98	100
Male	78	84	89	95	89	84	76
Bilateral	45	78	72	73	82	48	73
Family history	25	34	11	5	39	27	57
Other areas	22	32	32	16	35	30	22
Manual work	47	62	34	63	33	54	40
Epilepsy	3	3	6	2	1	2	0
Diabetes	3	7	3	14	6	4	3
Alcoholism	8	15	12	2	6	6	5
Trauma	17	9	10	15	10	14	27
Age at onset							
Male	54.4	47.4	44.1	5351	39.3	50.3	42.3
Female	60.2	54.3	54.6		54.3	54.0	52.0
Age at surgery							
Male	60.2	57.0	56.0	60.3	53.4	56.2	56.0
Female	63.3	61.4	62.8	63.0	64.3	68.5	59.4

compared with non-alcoholic patients, the alcoholic group has more northern Europeans ($p<0.001$), more family history ($p<0.01$), greater incidence of other areas involved ($p<0.001$), and more bilateral disease ($p<0.001$). The age at onset and at operation, although not significant, is earlier. The alcoholic patient has more extensive disease. Not only is there more bilateral disease ($p<0.001$) but there is also a greater incidence of three or more rays involved ($p<0.001$) and more radial side disease ($p<0.001$). These are the features of 'Dupuytren's diathesis'. The corollary is that alcoholism is probably a factor contributing to increased diathesis to DD.

In the context of this study trauma has been considered to be a disease. The prevalence of 14% in Profile A includes a single injury to the hand as well as the repetitive trauma of occupation. The prevalence is the same in patients of northern and southern European and Japanese origin suggesting that there is no association with race. The prevalence ranged from 9% in Canadians to 27% in Australians suggesting a certain bias in reporting. Trauma was more commonly reported in males and patients under 45 years of age as well as in epileptics and alcoholics. It was common in unilateral disease and patients with only one ray involved. A more detailed discussion of the association of DD with occupation and with a single injury to the hand is given in Chapter 23 and 24.

Extent of disease

In the profiles (at the end of this chapter) the types of hand involvement and operations performed are listed. In the northern European group the disease was limited to the palm in 6%. In 4% the palm was not involved. There was an almost equal distribution of one, two and three or more rays involved and the little and ring fingers were most frequently involved. The pattern of hand involvement in Profile B is considered to be 'typical'. Variations would then be more or less severe. Less severe disease would include more unilateral disease, more palm only or finger only or more one ray involvement. More severe disease would show more bilateral disease, more rays involved and, in particular, more radial side involvement of the thumb and index finger.

Types of operation

The many types of operation have been condensed here into four groups. A *local* operation included an open or closed fasciotomy, with or without a skin graft or the fasciectomy of Gonzales (1971), in which the fascia and perhaps some skin is excised locally and a full thickness skin graft is applied. A *regional fasciectomy* is one in which only the obviously diseased fascia is removed. An *extensive fasciectomy* is an operation in which not only the diseased fascia but also the normal or potentially diseased fascia is removed. A *dermofasciectomy*, which removes diseased fascia as well as overlying skin (which is replaced by a full thickness skin graft) is included in this latter group. It is interesting that amputations comprised only 1% of 1339 operations and all of these were of the little finger because of recurrent disease. The commonest operation in the palm as well as all but the little finger was a regional fasciectomy. An extensive fasciectomy was most common in the little finger, which reflects the extensive disease encountered in this finger as well as the difficulties of correcting the flexion contracture.

Most wounds were closed primarily by suture. In the palm 17% of wounds were left open after the method of McCash (1964). Almost 10% of wounds in the palm, fingers and thumb were skin grafted. A dermofasciectomy is often used in the treatment of recurrent disease but it is also the treatment of choice of some surgeons for primary disease.

Regional and general anaesthesia were used equally. Most patients received some kind of postoperative therapy although only 38% were splinted. Accessory procedures at the proximal interphalangeal joint to overcome flexion contracture after the fascia had been removed were uncommon. The overall complication rate was 17%.

Results of treatment

The result of treatment of a certain group were determined at 1 year (± 6 months) after operation on the assumption that the full benefit of operation and postoperative therapy would have been attained by that time, but recurrence would not have affected the initial result. The pre- and postopera-

Table 20.4 The distance of the fingertip to the distal crease of the palm before and after operation

	Little finger	Ring finger	Middle finger	Index finger
Patients with full flexion				
	n = 501	n = 497	n = 492	n = 413
Preoperatively	92%	93%	96%	97%
Postoperatively	83%	88%	90%	92%
Patients with full flexion pre- but not postoperatively				
	n = 52	n = 34	n = 33	n = 29
Postoperatively	2.1 ± 1.4 cm	2.5 ± 1.7 cm	2.5 ± 1.6 cm	2.3 ± 1.3 cm
Patients with limited flexion preoperatively				
	n = 42	n = 37	n = 20	n = 14
Preoperatively	1.6 ± 1.1 cm	1.8 ± 1.3 cm	2.0 ± 1.6 cm	2.0 ± 1.1 cm
Postoperatively	1.1 ± 1.1 cm	1.4 ± 1.6 cm	1.3 ± 1.5 cm	1.6 ± 1.4 cm
Full flexion postoperatively	39%	35%	31%	15%

tive angles for each joint of each digit are presented as the mean and standard deviation. In addition to joint measurements the results were also considered by outcome — perfect if the postoperative angle was 0°, improved if the angle was less than the preoperative angle, and worse if the postoperative angle was the same or greater. These outcome groups have proved to be the most sensitive index of a result*. In addition, data on pre- and postoperative flexion of the finger are recorded by measurements of the distance from the fingertip to the distal crease of the palm (Table 20.4). Most patients not only had full flexion preoperatively but also regained full flexion by 1 year. In patients who do not recover full flexion after operation the average distal crease of the palm is about 2 cm. Patients who had limited flexion before operation were not made worse by operation; in fact, some 30% of them attained full flexion after operation.

Two observations stand out clearly. The results at the metacarpophalangeal joint are much better than those at the proximal interphalangeal joint; the results in the little finger at the latter joint are poor. Although 75% of patients gained some improvement by operation for contracture at the proximal interphalangeal joint of the little finger, only 20% obtained a perfect result and 25% of patients became worse. The results in the ring and middle fingers are similar.

As shown in Profile B, in each finger at both the metacarpophalangeal and proximal interphalangeal joint the preoperative angle was lowest in the group with the worst outcome. In most joints where the outcome was worse the preoperative angle was less than 30°. The reason for the poor result is not clear but the observation suggests that joint contractures of less than 30° are best not operated upon. In a previous publication (Legge & McFarlane 1980) it was suggested that the degree of metacarpophalangeal joint contracture influenced the proximal interphalangeal joint result. This observation was tested with our current data in the little and ring fingers, as shown in Table 20.5 and 20.6. The average preoperative metacarpophalangeal and distal interphalangeal joint angle of the three outcome groups was similar in each finger, whereas there was a significant difference at the proximal interphalangeal joint, so it is concluded that the degree of contracture at these joints had no bearing upon the outcome at the proximal interphalangeal joint. It may be that with contractures of less than 30° the diseased fascia is not as apparent. A well developed cord may not be present and the surgeon may not remove sufficient tissue. As a result the contracture is not

*Preliminary exploratory analysis revealed that prediction of the outcome of surgery is complex and involves many factors such as pattern of disease, diathesis factors and surgical characteristics. No single general model of prediction is satisfactory for the many different presentations. An in-depth description of the various statistical procedures and methodology employed and the results obtained is beyond the scope of the present discussion.

Table 20.5 The relationship of the outcome in the little finger at the proximal interphalangeal joint (PIPJ) to the preoperative angles at the metacarpophalangeal joint (MPJ) and distal interphalangeal joint (DIPJ)

PIPJ outcome	*n*	MPJ		PIPJ		DIPJ	
		Pre	Post	Pre	Post	Pre	Post
Perfect	51	32.7 ± 29.3	0.2 ± 1.4	46.5 ± 23.8*	0	6.8 ± 16.7	1.6 ± 5.8
Improved	145	27.6 ± 30.8	1.3 ± 4.5	63.3 ± 21.3*	28.8 ± 17.5	4.8 ± 12.1	2.7 ± 8.5
Worse	66	31.7 ± 30.7	4.2 ± 17.2	34.9 ± 22.7*	44.9 ± 23.3	5.1 ± 12.2	4.1 ± 10.2

*There was a significant difference between each of the three groups at the PIPJ ($p<0.01$).

Table 20.6 The relationship of the outcome in the ring finger at the proximal interphalangeal joint (PIPJ) to the preoperative angles at the metacarpophalangeal joint (MPJ) and distal interphalangeal joint (DIPJ)

PIPJ outcome	*n*	MPJ		PIPJ		DIPJ	
		Pre	Post	Pre	Post	Pre	Post
Perfect	62	34.1 ± 27.2	4.4 ± 13.1	41.7 ± 24.1*	0	4.7 ± 15.9	1.9 ± 10.6
Improved	58	25.7 ± 27.2	2.8 ± 9.8	64.3 ± 22.8*	29.0 ± 18.2	6.4 ± 18.1	1.2 ± 6.5
Worse	18	35.6 ± 21.7	7.1 ± 12.9	28.2 ± 19.8*	36.2 ± 22.7	3.3 ± 12.1	2.9 ± 6.1

*There was a significant difference between each of the three groups at the PIPJ ($p<0.01$).

corrected and the residual disease, augmented by the postoperative scarring, causes further joint contracture.

The long-term results of treatment have been evaluated according to the prevalence of extension and recurrence of disease. Extension refers to the appearance or progress of disease outside the area of operation, whereas recurrence means the appearance of disease within the area of operation.

As discussed above, the initial result of operation has been evaluated at 1 year. From 2 years onward the patients have been evaluated for extension and/or recurrence of disease. As shown in Figures 20.2 and 20.3, about 20% of hands examined at yearly intervals present with extension and/or recurrence. However, less than 10% of hands, or less than one-half of patients with extension or recurrence, required a second operation.

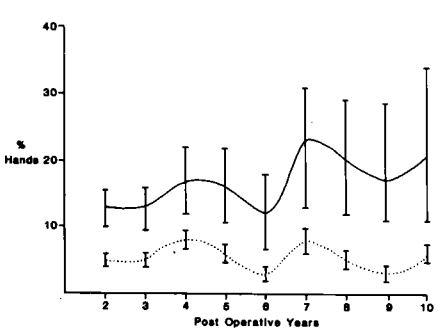

Fig. 20.2 Rate of recurrence of disease. ——— Recurrence; . . . . . recurrence requiring operation. Rate of recurrence within 95% confidence interval.

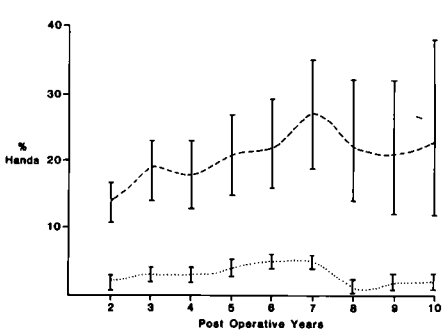

Fig. 20.3 Rate of extension of disease. — — — Extension; . . . . . extension requiring operation. Rate of extension within 95% confidence interval.

Progression of disease

Figure 20.4 shows that about 20% of patients either developed new disease or showed progression of existing disease in the other hand after they had had an operation. But very few of these patients had an operation on the second hand. Of the patients represented in 20.4, 80% had bilateral disease.

Perhaps of more interest are those patients who originally presented with unilateral disease but eventually had bilateral disease. (Fig. 20.5). This figure shows that about 55% of unilateral patients were affected bilaterally within 5 years of operation. Not many of them required an operation on the second hand. The number of patients in the series followed for longer than 5 years is too small for analysis but it must be assumed that more patients had bilateral involvement with time. Nevertheless, a certain number of patients continued to have unilateral involvement, with less severe Dupuytren's disease. The data in Table 20.7 shows that the average angle recorded at 1 year does not change significantly after several years. The contraction does not continue in the area from which the fascia has been removed. This lends support to the view that the fascia is diseased rather than simply responding to biomechanical forces; the scar tissue that forms as a result of the operation does not respond to biomechanical forces in such a way as to produce continuing joint contraction.

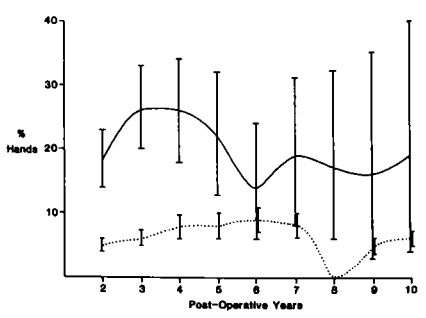

Fig. 20.4 Rate of appearance or progression of disease in the other hand after operation. ——— Other hand involved; . . . . . other hand requiring operation. Rate of appearance within 95% confidence interval.

VARIATIONS BY COUNTRY

In Profiles G–M the patient, hand, and operation profiles, and the results of treatment in various countries with sufficient data for analysis are given in descending order of the number of patients provided. The data for individual countries may prove of value in further studies but only some differences will be discussed, as shown in Tables 20.2, 20.3 and 20.8. The proportion of males operated upon in Japan is high although the sex ratio in Japan, as reported by Egawa et al (1985),

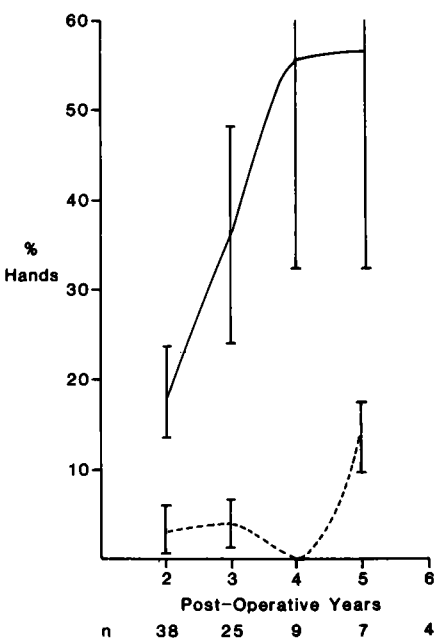

Fig. 20.5 Rate of appearance of disease in other hand of patients operated upon with unilateral disease. ——— Other hand involved; — — — other hand requiring operation. Rate of appearance within 95% confidence interval.

Table 20.7 The correction of flexion contracture over time (Northern Europeans with no previous surgery)

	Pre operative		Post operative									
Finger	*n*	Degrees	*n*	1 Year (degrees)	*n*	2 Years (degrees)	*n*	3 Years (degrees)	*n*	4 Years (degrees)	*n*	5 Years (degrees)
LITTLE												
MPJ	164	42.7±24.4	164	3.4±12.3	33	1.6± 5.1	30	2.5±10.2	14	0	4	13.7±27.5
PIPJ	162	50.6±25.5	162	24.9±21.5	37	32.4±25.1	32	29.7±24.4	15	41.0±21.2	3	26.7±30.6
DIPJ	29	30.3±16.6	29	7.6±12.7	8	8.7±12.5	5	11.0±16.0	5	16.2±18.9	0	
RING												
MPJ	163	36.5±18.6	163	1.7± 7.4	42	1.4± 5.7	30	2.8± 7.8	17	2.1± 8.5	5	12.0±26.8
PIPJ	188	50.2±26.6	188	14.0±19.3	18	11.3±16.7	10	2.5± 5.4	7	21.4±25.4	2	45.0±63.6
DIPJ	10	30.5±28.5	10	4.5±14.2	2	0	1	0				
MIDDLE												
MPJ	82	29.0±16.2	82	1.3± 5.7	18	0.3± 1.2	12	4.6±10.8	6	0	2	0
PIPJ	18	33.6±19.2	18	15.6±18.5					2	17.5± 3.5		
DIPJ	3	26.7±20.8	3	16.7±28.9								

MPJ = metacarpophalangeal joint; PIPJ = proximal interphalangeal joint; DIPJ = distal interphalangeal joint.
Notes:
Only hands for which at least 1 years' postoperative data are available are included in this table.
There was no significant change in postoperative angles with time.

Table 20.8 Percentage of Surgical procedures in the palm, by country

	USA	Canada	France	Japan	West Germany	UK	Australia
Local	16	7	0	17	1	2	3
Regional	58	81	49	53	14	90	56
Extensive	26	12	51	30	85	8	42

is similar to that in northern Europeans. The prevalence of bilateral disease is low in patients in both the USA and the UK. Some of this difference may be accounted for by a misunderstanding of the question, but also these two groups of patients had somewhat less severe disease. There were fewer hands with three or more rays involved, less radial side disease and less recurrent disease. Concerning family history, the low prevalence in Japan is consistent with previous reports from that country (Morinaga et al 1979; Egawa et al 1985) and is an indication of the mild expression of the disease in Orientals. None of the 6 black Africans reported by Mennen (1986) or the 12 Chinese reported by Wang (personal communication) had a positive family history. Is this an indication of decreased genetic penetration or does it suggest that factors other than heredity can initiate the disease?

The prevalence in France is not consistent with other features of the French profile, which indicates severe disease, and so presumably is a reporting error. The low figure of 16% for other areas involved in Japanese patients is consistent with the view that the disease is less severe in Orientals.

The ratio of manual to non-manual workers varies considerably, from 63% in Japan to 33% in West Germany. These differences probably reflect a different interpretation of manual and non-manual work.

The prevalence of epilepsy and diabetes is similar in various countries. As mentioned previously there is considerable bias involved in the reporting of alcoholism and trauma and this could account for the variations recorded. Age at onset provides questionable data because the patient's recollection of when the disease first appeared could be incorrect by 5 or even 10 years. Nevertheless, age at onset is always significantly older in females than in males. The age at operation provides reliable data and shows less variation

between countries. Again the average age when females are operated upon is significantly greater than for males.

The differences by country are not striking, other than in Japan where more males are operated upon, there is an infrequent family history, other areas are less often involved, diabetes is more common and alcoholism is less common. However, the last two features are representative of the Japanese population in general.

In Table 20.2 the same countries are compared regarding hand involvement. Disease in the palm only is indicative of either early or mild disease. Disease in the thumb and index finger, that is, radial side disease, is indicative of severe disease. The figures are predictably low in Japan but surprisingly low in the USA, West Germany and the UK. Again, there are no apparent trends other than that the Japanese have less severe hand involvement.

In Tables 20.8 and 20.9 the frequency of the type of operation performed in each country is listed; in Table 20.10 the overall operative procedure is compared. There are very obvious differences in methods of treatment. In West Germany an extensive operation is usually performed in the palm but a regional fasciectomy is done in the finger, whereas in Canada the reverse is true. These differences are compared in Table 20.11, related to the results of treatment. A significantly better correction of flexion contracture was obtained in West Germany at the proximal interphalangeal joint by a regional fasciectomy, and the outcome at the proximal interphalangeal joint of the little finger was better. The return of flexion after operation was similar in both countries. There was less recurrence or extension of disease in the Canadian patients in whom an extensive fasciectomy was performed in the finger.

Table 20.9 Percentage of surgical procedures in the fingers, by country

	USA	Canada	France	Japan	West Germany	UK	Australia
Local	13	4	4	8	8	3	7
Regional	53	13	56	61	83	90	17
Extensive	33	82	40	31	5	7	76
Amputation	1	1	0	0	4	0	0

Table 20.10 Operation profile by country (given in percentages)

	USA	Canada	France	Japan	West Germany	UK	Australia
Extensive operation							
Palm	26	12	51	30	85	8	42
Finger	33	82	40	31	5	7	76
PIPJ procedure	14	10	20	8	12	12	5
Palm closure							
Suture	81	66	41	72	98	57	89
Open	10	28	11	13	1	43	0
Graft	9	6	48	15	1	0	11
Finger closure							
Suture	88	92	57	86	93	95	51
Graft	8	7	41	8	6	2	49
General anaesthesia	43	60	82	33	1	60	0
Therapy	77	62	75	91	99	98	74
Splinting	46	59	36	60	16	44	33
Complications	14	17	36	11	16	16	19

PIPJ = proximal interphalangeal joint.

Table 20.11 Comparison of the results of treatment in Canada and West Germany in the little finger

	Canada		West Germany		*p*
	Pre	Post	Pre	Post	
MPJ	48°	4°	39°	5°	
PIPJ	46°	37°	56°	23°	<0.05
DCP (0°)	91%	82%	83%	76%	
Outcome					
Perfect		9%	15%		
Improved		47%	77%		<0.001
Worse		44%	8%		
Recurrence of extension		40%	66%		<0.001

MPJ = metacarpophalangeal joint; PIPJ = proximal interphalangeal joint; DCP = distal crease of the palm.

In France and Australia skin grafts are used frequently in the palm and fingers, that is, a dermofasciectomy is often performed. In both the UK and Canada the palm is often left open, after the method of McCash (1964). These procedures reflect different concepts of treatment rather than the management of different types of disease.

Correction of the flexion contracture at the proximal interphalangeal joint of the little finger is a good indication of the effectiveness of treatment because this joint is the most difficult to correct. Under all circumstances the worst results of treatment are seen at this joint. Therefore the results at this joint are used throughout this study to test the effect of variables upon treatment (Table 20.12). The best results were obtained in Japan, West Germany and Australia and the worst results in Canada. In Japan and West Germany regional fasciectomy was most often used in the finger whereas extensive fasciectomy was most common in Canada. In Australia and France dermofasciectomy was used frequently in both the palm and the finger; the results shown in Table 20.12 support the value of this procedure.

Regardless of the method of treatment the results at the metacarpophalangeal joint are consistently good. At the proximal interphalangeal joint the best results were obtained either by a regional fasciectomy, which is a conservative operation, or by a dermofasciectomy, a radical procedure. An extensive fasciectomy — a radical operation in which the skin is retained — produced the worst results.

TYPES OF DUPUYTREN'S DISEASE

Sex differences

In Profiles N and O male and female patients are compared and the significant differences are summarized in Table 20.13. It is well known that the disease is not only more common in males but also appears earlier and males are operated upon earlier. Females more often have a positive family history but one wonders if they simply know more about their relatives than do males. A history of trauma and manual work is more common in males but this is unlikely to be related to DD as much as to sex. The severity of disease is somewhat greater in the male. As a result more extensive operations are performed in males. The overall complications rate is no different between

Table 20.12 Results of treatment at the proximal interphalangeal joint of the little finger

	USA	Canada	France	Japan	West Germany	UK	Australia
Perfect	29	9	19	22	15	11	27
Improved	52	47	67	61	77	56	73
Worse	19	44	14	17	8	33	0

Table 20.13 Sex differences

Family history — more females	$p<0.008$
Sympathetic dystrophy — more females	$p<0.02$
Manual labour — more males	$p<0.001$
Trauma — more males	$p<0.001$
Age at onset — earlier in males	$p<0.001$
Age at operation — earlier in males	$p<0.001$
More than two rays involved in males	$p<0.05$
More extensive operation in palm in males	$p<0.01$
Results of operation — similar	
Recurrence and extension — similar	

the sexes, but sympathetic dystrophy occurs twice as frequently in females (7%) as in males (3.5%; $p<0.025$). The preoperative joint contractures were similar and the postoperative angles, although slightly better in males, were not significantly different. There was no difference in the incidence of recurrence and extension of disease.

Thus, differences between the sexes in patients with DD are not great. Presumably the disease is similar in the sexes but with a different genetic expression.

Severity of disease

About two-thirds of patients present with bilateral disease. The disease is usually more severe in one hand; in fact, only 26% of patients with bilateral disease have both hands operated on. Profiles P and Q permit comparison of patients with bilateral and unilateral disease. There is no difference in family origin or sex but the diathesis factors of family history, other areas, alcoholism, and recurrent disease are all less frequent in unilateral disease ($p<0.001$). Trauma is more frequent in unilateral disease but not significantly so. The involvement of the hand operated upon is less in the unilateral group. Fewer rays are involved ($p<0.001$) and there is less radial side disease. Also there are more patients with palm only and no palm disease. As a result the operation in the fingers is less extensive in unilateral disease ($p<0.001$) and complications are fewer ($p<0.005$). Preoperative and postoperative angles are not different but the chance of recurrence or extension is less with unilateral disease ($p<0.02$).

In a further attempt to identify types of disease, patients with one ray or three or more rays involved are compared in Profiles R and S. In the one ray group there are more northern Europeans and fewer Japanese ($p<0.005$). This trend is inconsistent with the view that disease in Orientals is less severe. However these data pertain to patients seeking an operation. It may be that northern Europeans are operated upon earlier than Japanese.

When only one ray is involved there is less bilateral disease ($p<0.001$), less family history ($p<0.05$), fewer other areas involved ($p<0.001$) and less alcoholism ($p<0.05$). There is more trauma ($p<0.005$). When only a single ray is involved the little finger is most often involved. A less extensive operation is performed in both the palm and digit when only one ray is involved and complications are less frequent ($p<0.005$).

Table 20.14 shows that there is no difference in the preoperative and postoperative angles but one ray is more likely to obtain a perfect result and less likely to obtain a worse result.

DD involving only one ray shows a significant decrease in diathesis factors and, like unilateral disease, is a mild expression of disease.

Early onset of disease

Profile T provides data on those patients who developed DD before the age of 45. When compared to patients with a late onset, there are more northern Europeans ($p<0.005$), more males ($p<0.001$), more other areas involved ($p<0.001$)

Table 20.14 Comparison of one ray and three or more rays, using results of treatment at the proximal interphalangeal joint of the little finger

	n	Pre	Post
One ray	97	54.4 ± 23.4	26.8 ± 22.8
Three or more rays	85	49.6 ±26.7	31.7 ±24.1

No significant difference in the pre or postoperative angles

Outcome group (%)

	Perfect	Improved	Worse
One Ray	18%	60%	22%
Three or more rays	14%	53%	33%

One ray has a significantly better outcome ($p<0.001$)

and more recurrent disease ($p<0.001$). These are all factors contributing to a stronger diathesis. In addition, these patients have more bilateral disease ($p<0.01$), more often three or more rays involved ($p<0.02$), more radial side disease ($p<0.001$) and the preoperative joint contracture is greater ($p<0.05$). Concerning treatment of this group, extensive fasciectomy was used more often in both the palm and fingers and grafts were more frequently used for closure ($p<0.001$).

The results of treatment were not significantly different from the older group but both recurrence and extension of disease were more frequent. In all, 36% of these patients had already had an operation for DD compared to 16% of patients over 45 years of age ($p<0.005$). Also 5 years after this younger group had been operated upon, 31% showed either recurrence or extension of disease, compared to only 14% of the older patients ($p<0.001$). Clearly, this group represents very severe disease.

Previous operation

In Profile U the data on patients who had previously been operated upon are presented. This group had significantly more family history, other areas involved, and the age at onset of the disease was earlier in both sexes ($p<0.001$). The incidence of bilateral disease, three or more rays involved and radial side disease was all greater ($p<0.001$). More extensive operations were performed, with more frequent use of skin grafts and proximal interphalangeal joint procedures ($p<0.001$).

CONCLUSIONS

This epidemiological study of surgical patients shows that the severity and extent of disease varies amongst subgroups of patients.

Typical disease presents to the surgeon in a white male of northern European origin who is about 57 years of age and has had DD for about 10 years. The disease is bilateral but one hand is more severely involved, with no relation to hand dominance. The patient is unlikely to admit to any diathesis factors such as a family history or recurrent disease, or have other areas involved. He is equally likely to have one, two, or three rays involved in the hand to be operated upon. The type of operation he receives will depend more on the surgeon than on the severity of disease. The operation will be successful but if the proximal interphalangeal joint of the little finger was flexed before operation, it is likely to have a residual flexion contracture. He may show progression of disease in both hands but is unlikely to have a second operation.

Females have later onset and less severe disease.

Japanese have later onset, fewer diathesis factors and less extensive disease.

Unilateral disease is less severe. In most patients this represents the early stage of bilateral disease but in some the disease remains unilateral.

Epilepsy and alcoholism are associated with more severe disease but trauma with less severe disease.

The data support a genetic origin of DD with variable expression by race and sex. The disease is seen in its most severe form in northern Europe and is less severe in Japan. There are insufficient data to consider the severity in the black African.

The results of treatment will be discussed in Section V, but clearly contracture was corrected readily at the metacarpophalangeal joint but not at the proximal interphalangeal joint.

Sufficient data were collected to record the incidence of recurrence and extension as well as the appearance and progression of disease in the other hand. In each case the incidence was about 20% and about half of the patients required an operation. This is evidence of the slow but progressive nature of the disease.

Profile A 1150 Patients; 1339 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	83%	*Male*	84%	Right	94%	Right	23%	Manual	51%
Japanese	3%	Female	16%	Left	5%	Left	13%	Non-manual	49%
Southern European	3%					Both	65%		
Chinese	1%	**Other areas involved**			26%*			**Age at onset (years)**	
Black American	1%					**Associated diseases**		Male	48.3±14.5
Black African	0.5%	**Family history**			27%	Epilepsy	3%	Female	57.6±14.2
American Indian	0.2%					Diabetes	7%		
Asian	0.1%	**Previous operation**			24%	Alcoholism	10%	**Age at operation (years)**	
						Trauma	14%	Male	57.5±12.0
								Female	62.7±11.4

Operation profile

Hand profile			Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	5%	*Operation*					
No palm	6%	Local	9%	9%	12%	Local	5%
		Regional	61%	49%	70%	Regional	51%
One ray	33%	Extensive	30%	40%	18%	General	44%
Two rays	31%	Amputation	0%				
Three or more rays	31%						
		Incision				**Procedure at**	
Thumb and thumb web	24%	Longitudinal	74%	92%	86%	**PIP joint**	12%
Index finger	12%	Transverse	26%	8%	14%		
Middle finger	32%					**Complications**	17%
Ring finger	63%	*Closure*					
Little finger	70%	Suture	74%	86%	87%	**Therapy**	76%
		Open	14%	2%	4%		
		Graft	12%	12%	9%	**Splinting**	42%

*Knuckle pads = 20%; foot = 10%; penis = 2%.

Profile A contd.

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	258	44.1±24.8	3.2±11.1	251	36.3±20.0	2.5± 8.4	126	28.1±16.3	2.3± 7.5	27	23.3±15.2	4.6± 9.3	16	19.6±11.6	8.8±17.2
Outcome															
Perfect	84%	42.8±24.1	0	86%	34.3±18.9	0	87%	27.9±15.9	0	78%	21.1±12.2	0	69%	21.5±11.2	0
Improved	13%	54.9±25.3	14.3±11.2	12%	52.5±20.4	15.3±14.0	10%	31.1±20.8	14.8± 8.1	11%	45.0±26.0	20.0±10.0	6%	35.0	30.0
Same/ worse	3%	31.4±31.5	46.4±35.9	2%	22.0±16.8	29.0±21.3	3%	25.0±17.3	27.5±20.6	11%	16.7± 5,8	21.7± 2.9	25%	10.4± 7.1	27.5±24.0
PIP joint	263	52.9±25.2	27.2±23.0	138	49.5±26.5	16.9±21.0	42	39.6±21.6	20.8±21.5						
Outcome															
Perfect	19%	46.5±23.8	0	45%	41.7±24.1	0	36%	30.3±14.3	0						
Improved	56%	63.2±21.3	28.8±17.4	42%	64.3±22.8	29.0±18.2	43%	50.4±20.7	26.4±13.4						
Same/ worse	25.	34.9±22.7	44.9±23.3	13%	28.2±19.8	36.2±22.7	21%	33.7±25.6	44.2±22.1						
DIP joint	52	26.9±17.0	8.8±11.9	23	32.8±28.1	4.0±10.5	6	18.3±16.0	9.2±20.1						
Outcome															
Perfect	56%	20.9±15.2	0	82%	29.5±23.8	0	66%	12.5± 5.0	0						
Improved	33%	38.6±15.4	16.6± 7.7	9%	87.0± 4.2	32.5±17.7	17%	10.0	5.0						
Same/ worse	11%	23.0±13.7	29.7± 8.9	9%	10.0± 7.1	14.0± 1.4	17%	50.0	50.0						

Mean ± standard deviation.
Perfect = the flexion contracture was completely corrected; improved = the flexion contracture was less, but not completely corrected; same/worse = there was no correction or the flexion contracture was worse.

Profile B 670 Northern European patients; 779 operations: no previous operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	100%	Male	83%	Right	96%	Right	24%	Manual	50%
		Female	17%	Left	4%	Left	13%	Non-manual	50%
						Both	63%		
		Other areas involved*			24%			**Age at onset (years)**	
						Associated diseases		Male	48.4±12.1
		Family history			29%	Epilepsy	3%	Female	57.9±10.3
						Diabetes	6%		
		Previous operation			0%	Alcoholism	11%	**Age at operation (years)**	
						Trauma	12%	Male	58.12±11.80
								Female	63.91±10.76

Operation profile

Hand profile			Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	6%	*Operation*					
No palm	4%	Local	7%	8%	10%	Local	7%
		Regional	63%	48%	74%	Regional	49%
One ray	35%	Extensive	30%	44%	16%	General	44%
Two rays	32%	Amputation	0%	0%	0%		
Three or more rays	28%						
		Incision				**Procedure at**	
Thumb and thumb web	22%	Longitudinal	74%	92%	82%	**PIP joint**	8%
Index finger	9%	Transverse	26%	8%	18%		
Middle finger	31%					**Complications**	17%
Ring finger	63%	*Closure*					
Little finger	67%	Suture	75%	89%	86%	**Therapy**	75%
		Open	16%	2%	5%		
		Graft	9%	9%	9%	**Splinting**	38%

*Knuckle pads = 20%; foot 7%; penis 1%.

Profile B contd.

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	164	42.7±24.4	3.4±12.3	165	36.5±18.6	1.7± 7.4	82	29.0±16.2	1.3± 5.7	17	22.1±11.7	2.4± 6.6	8	22.0±12.3	0±0
Outcome															
Perfect	85%	41.2±23.7	0± 0	90%	35.2±17.7	0± 0	93%	28.9±15.9	0± 0	88%	23.0±12.1	0± 0	100%	22.0±12.3	0±0
Improved	11%	58.1±21.7	12.5± 7.3	8%	53.5±21.9	14.6±13.1	4%	41.7±20.2	16.7± 7.6	0					
Same/ worse	4%	31.4±31.4	46.4±35.9	2%	21.7±16.1	31.7±25.7	4%	20.0±17.3	20.0±17.3	12%	15.0± 7.1	20.0± 0			
PIP joint	62	50.6±25.5	24.9±21.5	89	50.2±26.6	14.0±19.3	18	33.6±19.2	15.6±18.5	6	33.3±19.1	7.5±12.5	1	25.0	0±0
Outcome															
Perfect	20%	48.5±25.0	0± 0	48%	44.3±25.0	0± 0	50%	33.3±16.9	0± 0	67%	31.3±22.1	0± 0	100%	25.0	0±0
Improved	55%	60.3±20.9	26.6±15.4	43%	62.6±23.0	27.5±17.8	28%	47.0±22.2	29.0±15.6	16%	50.0	15.0			
Same/ worse	25%	30.7±23.5	41.6±23.5	8%	17.1±14.4	27.1±25.9	22%	17.5±5.0	33.8±12.5	16%	25.0	30.0			
DIP joint	29	30.0±16.6	7.6± 2.7	10	30.5±28.5	4.5±14.2	3	26.7±20.8	16.7±28.9	1	35.0±–	0			
Outcome															
Perfect	66%	20.5±16.0	0± 0	90%	23.9±20.6	0± 0	66%	15.0± 7.1	0± 0	100%	35.0	0			
Improved	20%	38.3±13.7	15.0± 8.9	10%	90.0±–	45.0									
Same/ worse	14%	26.3±14.9	32.5± 8.6				33%	50.0	50.0						

Mean ± standard deviation.
Outcome as in Profile A.

Profile C 27 Southern European patients; 38 Operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Southern European	100%	Male	96%	Right	84%	Right	30%	Manual	52%
		Female	4%	Left	16%	Left	22%	Non-manual	48%
						Both	48%		
		Other areas involved			19%			**Age at onset (years)**	
						Associated diseases		Male	48.9 ± 12.9
		Family history			24%	Epilepsy	0%	Female	—
						Diabetes	7%		
		Previous operation			26%	Alcoholism	7%	**Age at operation (years)**	
						Trauma	11%	Male	58.2±10.3
								Female	54

Operation profile

Hand profile			Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	5%	*Operation*					
No palm	5%	Local	14%	11%	0%	Local	5%
		Regional	69%	47%	86%	Regional	36%
One ray	18%	Extensive	17%	42%	14%	General	59%
Two rays	32%	Amputation	0%	0%	0%		
Three or more rays	45%						
		Incision				**Procedure at**	
Thumb and thumb web	34%	Longitudinal	17%	73%	67%	**PIP joint**	10%
Index finger	16%	Transverse	83%	27%	33%		
Middle finger	34%					**Complications**	18%
Ring finger	60%	*Closure*					
Little finger	68%	Suture	75%	75%	71%	**Therapy**	82%
		Open	6%	0%	0%		
		Graft	19%	25%	29%	**Splinting**	55%

Profile D 37 Epileptic patients; 42 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	88%	Male	81%	Right	100%	Right	16%	Manual	73%
Japanese	6%	Female	19%	Left	0%	Left	14%	Non-manual	27%
Black African	6%					Both	70%		
		Other areas involved			35%			**Age at onset (years)**	
						Associated diseases		Male	40.8 ± 13.1
		Family history			24%	Epilepsy	100%	Female	44.5 ± 2.1
						Diabetes	3%		
		Previous operation			43%	Alcoholism	8%	**Age at operation (years)**	
						Trauma	19%	Male	51.0 ± 11.1
								Female	55.2 ± 9.8

Operation profile

Hand profile			Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	0%	*Operation*					
No palm	2%	Local	5%	8%	13%	Local	2%
		Regional	70%	57%	75%	Regional	30%
One ray	31%	Extensive	25%	33%	12%	General	68%
Two rays	19%	Amputation	0%	2%	0%		
Three or more rays	50%						
		Incision				**Procedure at**	
Thumb and thumb web	41%	Longitudinal	78%	89%	67%	**PIP joint**	14%
Index finger	17%	Transverse	22%	11%	33%		
Middle finger	31%					**Complications**	17%
Ring finger	64%	Closure					
Little finger	81%	Suture	68%	87%	78%	**Therapy**	76%
		Open	15%	3%	11%		
		Graft	17%	10%	11%	**Splinting**	33%

Profile E 83 Diabetic patients; 96 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	66%	Male	84%	Right	93%	Right	18%	Manual	46%
Japanese	24%	Female	16%	Left	7%	Left	7%	Non-manual	54%
Southern European	6%					Both	75%		
Black American	4%	**Other areas involved**			28%			**Age at onset (years)**	
						Associated diseases		Male	52.2 ± 11.8
		Family history			26%	Epilepsy	1%	Female	55.5 ± 12.6
						Diabetes	100%		
		Previous operation			17%	Alcoholism	17%	**Age at operation (years)**	
						Trauma	12%	Male	58.7 ± 9.6
								Female	64.0 ± 18.6

Operation profile

Hand profile			Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	6%	*Operation*					
No palm	6%	Local	8%	3%	6%	Local	5%
		Regional	64%	54%	81%	Regional	48%
One ray	26%	Extensive	28%	43%	13%	General	47%
Two rays	29%	Amputation	0%	0%	0%		
Three or more rays	39%						
		Incision				**Procedure at**	
Thumb and thumb web	28%	Longitudinal	71%	88%	63%	**PIP joint**	28%
Index finger	17%	Transverse	29%	12%	37%		
Middle finger	36%					**Complications**	28%
Ring finger	69%	*Closure*					
Little finger	72%	Suture	75%	87%	100%	**Therapy**	79%
		Open	20%	4%	0%		
		Graft	5%	9%	0%	**Splinting**	51%

Profile F 111 Alcoholic patients; 149 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	93%	Male	90%	Right	94%	Right	10%	Manual	76%
Japanese	3%	Female	10%	Left	6%	Left	9%	Non-manual	24%
Southern European	2%					Both	81%		
Black American	1%								
American Indian	1%	**Other areas involved**			44%			**Age at onset (years)**	
						Associated diseases		Male	45.4 ± 15.5
		Family history			38%	Epilepsy	3%	Female	54.6 ± 8.6
						Diabetes	7%		
		Previous operation			28%	Alcoholism	100%	**Age at operation (years)**	
						Trauma	20%	Male	55.2 ± 8.2
								Female	61.3 ± 7.5

Operation profile

Hand profile			Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	3%	*Operation*					
No palm	2%	Local	7%	8%	9%	Local	5%
		Regional	72%	37%	77%	Regional	39%
One ray	26%	Extensive	21%	54%	14%	General	56%
Two rays	28%	Amputation	0%	1%	0%		
Three or more rays	43%						
		Incision				**Procedure at**	
Thumb and thumb web	36%	Longitudinal	72%	93%	90%	**PIP joint**	15%
Index finger	14%	Transverse	28%	7%	10%		
Middle finger	41%					**Complications**	21%
Ring finger	69%	*Closure*					
Little finger	78%	Suture	65%	86%	82%	**Therapy**	76%
		Open	24%	4%	5%		
		Graft	11%	10%	13%	**Splinting**	48%

Profile G 339 American patients; 373 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	89%	Male	78%	Right	93%	Right	33%	Manual	47%
Southern European	6%	Female	22%	Left	7%	Left	22%	Non-manual	53%
Black American	4%					Both	45%		
		Other areas involved			22%			**Age at onset (years)**	
						Associated diseases		Male	54.4±15.6
		Family history			25%	Epilepsy	3%	Female	60.2±15.1
						Diabetes	3%		
		Previous operation			19%	Alcoholism	8%	**Age at operation (years)**	
						Trauma	17%	Male	60.2±12.2
								Female	63.3±12.2

Operation profile

Hand profile			**Palm**	**Fingers**	**Thumb**	**Anaesthesia**	
Palm only	6%	*Operation*					
No palm	9%	Local	16%	13%	21%	Local	6%
		Regional	58%	53%	61%	Regional	51%
One ray	33%	Extensive	26%	33%	18%	General	43%
Two rays	35%	Amputation	0%	1%	0%		
Three or more rays	26%						
		Incision				**Procedure at**	
Thumb and thumb web	18%	Longitudinal	75%	85%	78%	**PIP joint**	14%
Index finger	9%	Transverse	25%	15%	22%		
Middle finger	30%					**Complications**	14%
Ring finger	67%	*Closure*					
Little finger	70%	Suture	81%	88%	81%	**Therapy**	77%
		Open	10%	4%	14%		
		Graft	9%	8%	5%	**Splinting**	46%

Profile G contd. The results of operation by digit and joint recorded 1 year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
D MP joint	65	43.8±22.5	3.8±12.2	69	34.4±18.7	1.9± 4.9	29	29.4±19.3	1.2± 3.7	6	15.0± 1.8	3.3±8.2	2	23.0±4.2	0±0
Outcome															
Perfect	78%	43.4±22.5	0± 0	83%	31.9±16.0	0± 0	90%	28.7±18.7	± 0	83%	16.0±12.9	0±0	100%	23.0±4.2	0±0
Improved	17%	53.6±19.1	11.3± 6.0	16%	52.5±24.6	9.5± 5.0	7	47.5±24.71	2.5± 3.5						
Same/ worse	5%	15.0± 5.0	40.0±43.6	1%	15.0	25.0	3%	10.0	10.0	17%	10.0	20.0			
PIP joint	56	47.5±26.6	19.5±18.9	40	43.7±26.4	10.4±14.2	6	23.8±15.4	8.3±10.3	1	97.0	5.0	0		
Outcome															
Perfect	29%	44.4±23.1	0± 0	52%	42.7±28.5	0± 0	50%	28.3±18.9	0± 0						
Improved	52%	58.6±24.4	26.6±14.9	38%	54.2±19.7	21.3±13.5	33%	25.0± 7.1	17.5±10.6	100%	97.0	5.0			
Same/ worse	19%	22.7±19.8	29.1±22.2	10	17.5±16.6	21.5±14.9	17%	5.0	15.0						
DIP joint	12	23.3±19.1	2.5± 8.7	7	21.4±20.7	0± 0	1	10.0	0	0					
Outcome															
Perfect	92%	22.6±19.9	0± 0	100%	21.4±20.7	0± 0	100%	10.0	0						
Improved															
Same/ worse	8%	30.0	30.0												

Profile H 294 Canadian patients; 345 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	98%	Male	84%	Right	94%	Right	15%	Manual	62%
Southern European	2%	Female	16%	Left	6%	Left	7%	Non-manual	38%
						Both	78%		
		Other areas involved			32%			**Age at onset (years)**	
						Associated diseases		Male	47.4±11.9
		Family history			34%	Epilepsy	3%	Female	54.3±14.3
						Diabetes	7%		
		Previous operation			30%	Alcoholism	15%	**Age at operation (years)**	
						Trauma	9%	Male	57.0±11.6
								Female	61.4±11.0

Operation profile

Hand profile			**Palm**	**Fingers**	**Thumb**	**Anaesthesia**	
Palm only	5%	*Operation*					
No palm	4%	Local	7%	4%	7%	Local	6%
		Regional	81%	13%	74%	Regional	34%
One ray	30%	Extensive	12%	82%	19%	General	60%
Two rays	28%	Amputation	0%	1%	0%		
Three or more rays	37%						
		Incision				**Procedure at**	
Thumb and thumb web	36%	Longitudinal	53%	99%	98%	**PIP joint**	10%
Index finger	13%	Transverse	47%	1%	2%		
Middle finger	34%					**Complications**	17%
Ring finger	63%	*Closure*					
Little finger	69%	Suture	66%	92%	98%	**Therapy**	62%
		Open	28%	1%	2%		
		Graft	6%	7%	0%	**Splinting**	59%

Profile H contd. The results of operation by digit and joint recorded 1 year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	48	48.0±25.3	3.5±15.5	63	35.8±16.0	1.3± 7.2	32	31.1±14.6	1.6± 7.2	9	28.9± 8.2	3.3± 6.1			
Outcome															
Perfect	90%	47.9±24.4	0± 0	93%	35.8±15.2	0± 0	94%	31.2±14.8	0± 0	78%	32.1± 5.7	0± 0			
Improved	4%	45.0±35.4	7.5± 3.5	5%	43.3±28.4	25.0±25.9	3%	20.0	10.0	11%	15.0	10.0			
Same/ worse	6%	51.7±43.1	51.7±43.1	2%	10.0	10.0	3%	40.0	40.0	11%	20.0	20.0			
PIP joint	55	46.2±21.6	36.6±20.8	28	55.9±23.7	15.9±15.8	8	33.8±14.3	18.8±18.7	2	52.5± 3.5	7.5±10.6			
Outcome															
Perfect	9%	35.0±15.0	0± 0	41%	47.7±20.5	0± 0	37%	48.3±10.4	0± 0	50%	55.0	0± 0			
Improved	47%	58.1±19.0	32.4±16.1	56%	63.3±24.4	26.0±10.6	25%	32.5± 3.5	17.5± 3.5	50%	50.0	15.0± 0			
Same/ worse	44%	35.7±19.0	48.8±16.4	3%	25.0	40.0	37%	20.0± 0	38.3±10.4						
DIP joint	9	19.4±12.1	12.2±16.9	1	14.0	0				1	35.0	0			
Outcome															
Perfect	56%	14.0± 6.5	0±0	100%	14.0	0				100%	35.0	0			
Improved	11%	30.0	10.0												
Same/ worse	33%	25.0±18.0	33.3±10.4												

Profile I 128 Japanese patients; 118 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Japanese	100%	Male	95%	Right	97%	Right	17%	Manual	63%
		Female	5%	Left	3%	Left	10%	Non-manual	37%
						Both	73%		
		Other areas involved			16%			**Age at onset (years)**	
						Associated diseases		Male	53.1 ± 12.1
		Family history			5%	Epilepsy	2%	Female	43.0
						Diabetes	14%		
		Previous operation			10%	Alcoholism	2%	**Age at operation (years)**	
						Trauma	15%	Male	60.3 ± 11.6
								Female	63.0 ± 1.4

		Operation profile			
Hand profile			**Palm**	**Fingers**	**Thumb**
Palm only	6%	*Operation*			
No palm	3%	Local	17%	8%	50%
		Regional	53%	61%	50%
One ray	29%	Extensive	30%	31%	0%
Two rays	35%	Amputation	0%	0%	0%
Three or more rays	30%				
		Incision			
Thumb and thumb web	12%	Longitudinal	70%	89%	100%
Index finger	11%	Transverse	30%	11%	
Middle finger	31%				
Ring finger	72%	*Closure*			
Little finger	75%	Suture	72%	87%	100%
		Open	13%	5%	
		Graft	15%	8%	

Anaesthesia	
Local	5%
Regional	62%
General	33%
Procedure at PIP Joint	8%
Complications	11%
Therapy	91%
Splinting	60%

Profile I contd. The results of operation by digit and joint recorded 1 year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	28	48.8 ± 28.7	1.7 ± 4.0	23	35.4 ± 24.2	3.0 ± 6.2	12	22.2 ± 13.5	4.0 ±8.9	3	17.7 ± 7.5	0 ± 0	2	23.5 ± 16.3	45.0 ± 21.2
Outcome															
Perfect	82%	48.6 ± 27.2	0 ± 0	74%	29.8 ± 23.9	0 ± 0	75%	20.3 ± 9.8	0 ± 0	100%	17.7 ± 7.5	0 ± 0	50%	35.0	30.0
Improved	18%	55.4 ± 37.4	9.4 ± 3.8	26%	51.3 ± 18.2	11.7 ± 7.1	25%	27.7 ± 23.7	16.0 ± 12.1				50%	12.0	60.0
Same/worse															
PIP joint	22	56.7 ± 29.8	22.8 ±20.4	13	33.8 ±30.4	14.5 ± 17.9	1	43.0	43.0	0	0				
Outcome															
Perfect	19%	30.0 ± 8.2	0 ± 0	46%	17.5 ± 6.1	0 ± 0									
Improved	67%	72.4 ± 21.8	29.0 ± 17.7	23%	75.3 ± 35.0	20.7 ± 5.1									
Same/worse	14%	15.0 ± 17.3	24.0 ± 28.7	31%	27.0 ± 22.4	31.5 ± 20.4	100%	43.0	43.0						

Profile J 118 French patients; 132 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	95%	Male	89%	Right	95%	Right	21%	Manual	34%
Southern European	5%	Female	11%	Left	5%	Left	7%	Non-manual	66%
						Both	72%		
		Other areas involved			32%			**Age at onset (years)**	
						Associated diseases		Male	44.1 ± 13.1
		Family history			11%	Epilepsy	6%	Female	54.6 ± 11.6
						Diabetes	3%		
		Previous operation			22%	Alcoholism	12%	**Age at operation (years)**	
						Trauma	10%	Male	56.0 ± 9.8
								Female	62.8 ± 10.4

Hand profile		**Operation profile**	Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	5%	*Operation*					
No palm	0%	Local	0%	4%	0%	Local	13%
		Regional	49%	56%	55%	Regional	5%
One ray	36%	Extensive	51%	40%	45%	General	82%
Two rays	26%	Amputation	0%	0%	0%		
Three or more rays	33%						
		Incision				**Procedure at**	
Thumb and thumb web	26%	Longitudinal	67%	93%	57%	**PIP joint**	20%
Index finger	20%	Transverse	33%	7%	43%		
Middle finger	31%					**Complications**	36%
Ring finger	56%	*Closure*					
Little finger	73%	Suture	41%	57%	22%	**Therapy**	75%
		Open	11%	2%	0%		
		Graft	48%	41%	78%	**Splinting**	36%

Profile J contd. The results of operation by digit and joint recorded 1 year ±6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	19	43.9 ± 20.9	1.3 ± 5.7	14	40.0 ± 19.5	2.5 ± 6.4	7	29.3 ± 17.9	3.6 ± 9.4	0			4	27.5 ± 15.0	0 ± 0
Outcome															
Perfect	95%	42.2 ± 21.4	0 ∓ 0	86%	38.3 ± 20.6	0 ± 0	86%	29.2 ± 19.6	0 ± 0				100%	27.5 ± 15.0	0 ± 0
Improved	5%	75.0	25.0	14%	50.0 ± 7.1	17.5 ± 3.5	14%	30.0	25.0						
Same/worse															
PIP joint	18	44.2 ± 22.1	15.8 ± 12.6	6	59.2 ± 12.4	12.5 ± 15.1	1	35.0	0	2	35.0 ± 14.1	0 ± 0	1	25.0	0 ± 0
Outcome															
Perfect	22%	45.0 ± 17.8	0 ± 0	50%	58.3 ± 12.6	0 ± 0	100%	35.0	0	100%	35.0 ± 14.1	0 ± 0	100%	25.0	0 ± 0
Improved	61%	53.2 ± 17.1	18.6 ± 9.0	50%	60.0 ± 15.0	25.0 ± 10.0									
Same/worse	17%	10.0 ± 5.0	26.7 ± 15.3												
DIP joint	3	28.3 ± 7.6	5.0 ± 8.7	0			0			0					
Outcome															
Perfect	67%	27.5 ± 10.6	0 ± 0												
Improved	33%	30.0	15.0												
Same/worse															

Profile K 108 West German patients; 171 operations

Family origin		Sex		Hand dominance		Hand involved		Occupation	
Northern European	100%	Male	89%	Right	89%	Right	12%	Manual	33%
		Female	11%	Left	11%	Left	6%	Non-manual	67%
						Both	82%		
		Other areas involved			35%			Age at onset (years)	
						Associated diseases		Male	39.3 ± 12.0
		Family history			39%	Epilepsy	1%	Female	54.3 ± 8.2
						Diabetes	6%		
		Previous operation			37%	Alcoholism	6%	Age at operation (years)	
						Trauma	10%	Male	53.4 ± 10.8
								Female	64.3 ± 6.5

Hand profile		Operation profile	Palm	Fingers	Thumb	Anaesthesia	
Palm only	0%	*Operation*					
No palm	16%	Local	1%	8%	8%	Local	0%
		Regional	14%	83%	92%	Regional	99%
One ray	36%	Extensive	85%	5%	0%	General	1%
Two rays	35%	Amputation	0%	4%	0%		
Three or more rays	29%						
		Incision				Procedure at	
Thumb and thumb web	19%	Longitudinal	97%	95%	83%	PIP joint	12%
Index finger	13%	Transverse	3%	5%	17%		
Middle finger	41%					Complications	16%
Ring finger	62%	*Closure*					
Little finger	70%	Suture	98%	93%	100%	Therapy	99%
		Open	1%	1%	0%		
		Graft	1%	6%	0%	Splinting	16%

Profile K contd. The results of operation by digit and joint recorded 1 Year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	n	Pre	Post	n	Pre	Post	n	Pre	Post	n	Pre	Post
MP joint	14	39.3 ± 26.2	5.0 ± 13.4	18	38.6 ± 16.9	3.6 ± 14.1	13	21.9 ± 11.1	0.8 ± 2.8	4	11.3 ± 6.3	0 ± 0	2	15.0 ±	0 ± 0
Outcome															
Perfect	79%	36.8 ± 26.5	0 ± 0	89%	37.8 ± 17.7	0 ± 0	92%	22.9 ± 10.9	0 ± 0	100%	11.3 ± 6.3	0 ± 0	100%	15.0 ± 0	0 ± 0
Improved	14%	62.5 ± 17.7	10.0 ± 0	5%	50.0	5.0									
Same/worse	7%	20.0 ± 0	50.0	5%	40.0	60.0	8%	10.0	10.0						
PIP joint	13	56.2 ± 20.4	22.7 ± 20.9	6	49.5 ± 36.2	42.5 ± 43.4	4	43.8 ± 31.9	26.3 ± 22.9	1	15.0	0	0		
Outcome															
Perfect	15%	52.5 ± 31.8	0 ± 0	33%	27.5 ± 10.6	0 ± 0	25%	25.0	0	100%	15.0	0			
Improved	77%	55.5 ± 20.5	21.5 ± 10.0	33%	93.5 ± 4.9	82.5 ± 10.6	50%	70.0 ± 14.1	42.5 ± 17.7						
Same/worse	8%	70.0	80.0	33%	27.5 ± 24.7	45.0 ± 49.5	25%	10.0	20.0						
DIP joint	3	38.3 ± 20.8	8.3 ± 10.4	1	50.0	0 ± 0	2	35.0 ± 21.1	25.0 ± 35.3	0					
Outcome															
Perfect	33%	15.0	0	100%	50.0	0 ± 0	50%	20.0	0						
Improved	67%	50.0 ± 7.1	12.5 ± 10.6												
Same/worse							50%	50.0	50.0						

Profile L 50 British patients; 50 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	98%	Male	84%	Right	97%	Right	36%	Manual	54%
Asian	2%	Female	16%	Left	3%	Left	16%	Non-manual	46%
						Both	48%		
		Other areas involved			30%			**Age at onset (years)**	
						Associated diseases		Male	50.3 ± 16.3
		Family history			27%	Epilepsy	2%	Female	54.0 ± 14.8
						Diabetes	4%		
		Previous operation			6%	Alcoholism	6%	**Age at operation (years)**	
						Trauma	14%	Male	56.2 ± 10.0
								Female	68.5 ± 10.5

Hand profile		**Operation profile**	Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	4%	*Operation*					
No palm	4%	Local	2%	3%	0%	Local	0%
		Regional	90%	90%	100%	Regional	40%
One ray	50%	Extensive	8%	7%	0%	General	60%
Two rays	30%	Amputation	0%	0%	0%		
Three or more rays	16%						
		Incision				**Procedure at**	
Thumb and thumb web	12%	Longitudinal	12%	59%	33%	**PIP joint**	12%
Index finger	2%	Transverse	88%	41%	67%		
Middle finger	22%					**Complications**	16%
Ring finger	36%	*Closure*					
Little finger	70%	Suture	57%	95%	100%	**Therapy**	98%
		Open	43%	3%	0%		
		Graft	0%	2%	0%	**Splinting**	44%

Profile L contd. The results of operation by digit and joint recorded 1 Year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	11	27.3 ± 13.7	0 ± 0	7	30.0 ± 15.5	0 ± 0	5	28.0 ± 14.4	0 ± 0	0			0		
Outcome															
Perfect	100%	27.3 ± 13.7	0 ± 0	100%	30.0 ± 15.5	0 ± 0	100%	28.0 ± 14.4	0 ± 0						
Improved															
Same/worse															
PIP joint	9	47.2 ± 34.3	18.3 ± 11.5	6	43.8 ± 36.3	10.8 ± 15.6	0			0			0		
Outcome															
Perfect	11%	25.0	0	50%	24.3 ± 4.0	0									
Improved	56%	74.0 ± 17.1	25.0 ± 10.0	33%	90.0 ± 0	25.0 ± 21.2									
Same/worse	33%	10.0	13.3	17%	10.0	15.0									
DIP joint	0			0			0			0					
Outcome															
Perfect															
Improved															
Same/worse															

Profile M 37 Australian patients; 43 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	100%	*Male*	76%	Right	97%	Right	22%	Manual	40%
		Female	24%	Left	3%	Left	5%	Non-maunal	60%
						Both	73%		
		Other areas involved			22%			**Age at onset (years)**	
						Associated diseases		Male	42.3 ± 11.4
		Family history			57%	Epilepsy	0%	Female	52.0 ± 2.9
						Diabetes	3%		
		Previous operation			30%	Alcoholism	5%	**Age at operation (years)**	
						Trauma	27%	Male	56.0 ± 13.0
								Female	59.4 ± 8.1

Hand profile		**Operation profile**	Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	9%	*Operation*					
No palm	7%	Local	3%	7%	0%	Local	5%
		Regional	56%	17%	57%	Regional	95%
One ray	40%	Extensive	42%	76%	43%	General	0%
Two rays	26%	Amputation	0%	0%	0%		
Three or more rays	25%						
		Incision				**Procedure at**	
Thumb and thumb web	35%	Longitudinal	71%	95%	86%	**PIP joint**	5%
Index finger	12%	Transverse	29%	5%	14%		
Middle finger	21%					**Complications**	19%
Ring finger	51%	*Closure*					
Little finger	67%	Suture	89%	51%	100%	**Therapy**	74%
		Open	0%	0%	0%		
		Graft	11%	49%	0%	**Splinting**	33%

Profile M contd. The results of operation by digit and joint recorded 1 year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	12	28.8 ± 20.9	1.3 ± 3.1	8	24.4 ± 17.6	0 ± 0	1	15.0	0 ± 0	0			1	10.0	0 ± 0
Outcome															
Perfect	83%	25.0 ± 14.3	0 ± 0	100%	24.4 ± 17.6	0 ± 0	100%	15.0	0				100%	10.0	0 ± 0
Improved	17	47.5 ± 45.9	7.5 ± 3.5												
Same/worse															
PIP joint	11	57.7 ± 20.4	18.2 ± 15.9	3	38.3 ± 25.7	11.7 ± 10.4	1	10.0	0	2	17.5 ± 10.6	15.0 ± 21.2	0		
Outcome															
Perfect	27%	43.3 ± 33.3	0 ± 0	33%	10.0	0	100%	10.0	0	50%	10.0	0			
Improved	73%	63.1 ± 12.5	25.0 ± 12.8	67%	52.5 ± 10.6	17.5 ± 3.5									
Same/worse										50%	25.0	30.0			
DIP joint	1	20.0	10.0	0			0			0					
Outcome															
Perfect															
Improved	100%	20.0	10.0												
Same/worse															

Profile N 969 Male patients; 1145 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	79%	Male	100%	Right	94%	Right	22%	Manual	55%
Southern European	3%	Female	0%	Left	6%	Left	12%	Non-manual	45%
Japanese	13%					Both	66%		
Chinese	1%	**Other areas involved**			27%	**Age at onset (years)**			
Black American	1%					**Associated diseases**		Male	48.3 ± 14.5
		Family history			26%	Epilepsy	3%		
						Diabetes	7%		
		Previous operation			24%	Alcoholism	10%	**Age at operation (years)**	
						Trauma	15%	Male	57.5 ± 12.0

Hand profile		**Operation profile**	Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	5%	*Operation*					
No palm	6%	Local	8%	8%	10%	Local	6%
		Regional	60%	53%	71%	Regional	52%
One ray	32%	Extensive	32%	38%	19%	General	42%
Two rays	31%	Amputation	0%	1%	0%		
Three or more rays	31%						
		Incision				**Procedure at**	
Thumb and thumb web	24%	Longitudinal	74%	89%	87%	**PIP joint**	11%
Index finger	13%	Transverse	26%	11%	13%		
Middle finger	33%					**Complications**	16%
Ring finger	65%	*Closure*					
Little finger	71%	Suture	73%	86%	86%	**Therapy**	76%
		Open	15%	3%	5%		
		Graft	12%	11%	9%	**Splinting**	41%

Profile N contd. The results of operation by digit and joint recorded 1 year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	179	44.2 ± 24.4	2.9 ± 11.3	173	36.4 ± 19.3	1.6 ± 5.9	88	28.5 ± 15.6	1.7 ± 6.3	17	21.6 ± 10.2	1.8 ± 5.3	10	21.7 ±12.1	9.0 ± 20.2
Outcome															
Perfect	85%	43.0 ± 23.5	0	88%	35.1 ± 18.4	0	91%	28.0 ± 15.3	0	88%	22.2 ± 10.7	0	80%	21.2 ±12.2	0
Improved	12%	56.0 ± 25.0	11.8 ± 7.2	10%	50.2 ± 21.3	13.4 ± 11.9	8%	32.6 ± 20.1	15.4 ± 8.6	6%	15.0 ± 0	10.0 ± 0	10%	35.0 ±0	30.0 ± 0
Same/worse	3%	33.3 ± 34.0	45.8 39.3	1%	12.5 ± 3.5	17.5 ± 10.6	1%	40.0 ± 0	40.0 ± 0	6%	20.0 ± 0	20.0 ± 0	10%	12.0 ±0	60.0 ± 0
PIP joint	157	50.3 ± 26.3	23.9 ± 21.1	89	47.3 ± 26.2	13.7 ± 18.0	18	34.1 ± 19.1	18.5 ± 18.8	6	42.8 ± 31.0	5.8 ±12.0	1	25.0 ± 0	0
Outcome															
Perfect	22%	41.6 ± 21.9	0	49%	40.1 ±24.2	0	39%	35.0 ± 17.8	0	67%	33.7 ± 20.2	0	100%	25.0 ± 0	0
Improved	55%	62.8 ± 22.2	27.4 ± 16.3	42%	60.8 ±23.4	25.6 ± 14.2	33%	42.5 ± 22.7	25.8 ±15.9	17%	97.0 ± 0	5.0 ± 0			
Same/worse	22%	27.9 ± 21.4	39.0 ± 22.8	9%	25.0 ±18.3	34.5 ± 24.6	28%	22.6 ± 12.2	35.6 ±11.6	17%	25.0 ± 0	30.0 ± 0			
DIP joint	32	25.8 ± 16.3	8.4 ± 12.5	12	38.2 ± 35.3	6.5 ± 13.8	3	26.7 ± 20.8	16.7 ± 28.9	0					
Outcome															
Perfect	59%	21.4 ± 15.9	0	75%	31.1 ± 30.4	0	67%	15.0 ± 2.1	0						
Improved	25%	38.4 ± 12.6	15.2 ± 8.2	17%	87.0 ± 4.2	32.5 ± 17.7									
Same/worse	16%	22.6 ± 15.3	29.6 ± 9.9	8%	5.0 ± 0	13.0 ± 0	33%	50.0	50.0						

Profile O 181 Female patients; 194 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	94%	Male	0%	Right	94%	Right	28%	Manual	32%
Japanese	4%	Female	100%	Left	6%	Left	13%	Non-manual	68%
Black American	2%					Both	59%		
		Other areas involved		23%				**Age at onset (years)**	
						Associated diseases			
		Family history		35%		Epilepsy	4%	Female	57.6 ± 14.2
						Diabetes	7%		
		Previous operation		24%		Alcoholism	6%	**Age at operation (years)**	
						Trauma	8%		
								Female	62.7 ± 11.4

Operation profile

Hand profile			Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	9%	*Operation*					
No palm	8%	Local	14%	20%	25%	Local	6 %
		Regional	65%	45%	63%	Regional	44%
One ray	39%	Extensive	21%	34%	12%	General	50%
Two rays	28%	Amputation	0%	1%	0%		
Three or more rays	24%						
		Incision				**Procedure at**	
Thumb and thumb web	22%	Longitudinal	73%	92%	73%	**PIP joint**	15%
Index finger	10%	Transverse	27%	8%	27%		
Middle finger	29%					**Complications**	19%
Ring finger	48%	*Closure*					
Little finger	67%	Suture	78%	88%	93%	**Therapy**	75%
		Open	10%	1%	0%		
		Graft	12%	11%	7%	**Splinting**	47%

Profile O cont'd. The results of operation by digit and joint recorded 1 year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	27	41.9 ± 27.4	3.0 ± 9.0	31	33.1 ± 17.0	3.2 ± 11.1	13	23.8 ± 16.5	1.5 ± 3.8	5	16.0 ± 14.7	4.0 ± 8.9	1	26.0 ± 0	0
Outcome															
Perfect	85%	41.2 ± 27.1	0	84%	29.8 ± 15.0	0	85%	26.4 ± 16.7	0	80%	17.5 ± 16.6	0	100%	26.0 ± 0	0
Improved	11%	55.0 ± 35.0	10.0 ± 0	13%	52.5 ± 20.2	9.5 ± 4.2									
Same/worse	4%	20.0 ± 0	50.0 ± 0	3%	40.0 ± 0	60.0 ± 0	15%	10.0 ± 0	10.0 ± 0	20%	10.0 ± 0	20.0 ± 0			
PIP joint	36	53.3 ± 23.6	28.4 ± 22.4	16	52.5 ± 33.0	17.2 ± 23.9	3	20.0 ± 18.0	5.0 ± 8.7	2	32.5 ± 24.7	7.5 ± 10.6	0		
Outcome															
Perfect	14%	74.8 ± 13.9	0	37%	48.3 ± 30.6	0	67%	27.5 ± 17.7	0	50%	15.0 ± 0	0			
Improved	56%	57.1 ± 17.5	26.2 ± 13.6	37%	80.3 ± 14.2	32.5 ± 30.6				50%	50.0 ± 0	15.0 ± 0			
Same/worse	31%	36.5 ± 26.8	45.2 ± 26.1	25%	17.0 ± 16.5	20.0 ± 14.7	33%	5.0 ± 0	15.0 ± 0						
DIP joint	5	12.0 ± 7.6	2.0 ± 4.5	2	17.5 ± 3.5	0	0			1	35.0 ± 0	0			
Outcome															
Perfect	80%	10.0 ± 7.1	0	100%	17.5 ± 3.5	0				100%	35.0 ± 0	0			
Improved	20%	20.0 ± 0	10.0 ± 0												
Same/worse															

Profile P 744 bilateral patients; 939 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	83%	Male	86%	Right	94%	Right	0%	Manual	53%
Southern European	2%	Female	14%	Left	6%	Left	0%	Non-manual	47%
Japanese	13%					Both	100%		
Black American	1%	**Other areas involved**			30%			**Age at onset (years)**	
Chinese	1%					**Associated diseases**		Male	47.9 ± 14.5
		Family history			30%	Epilepsy	3%	Female	55.8 ± 14.0
						Diabetes	8%		
		Previous operation			26%	Alcoholism	12%	**Age at operation (years)**	
						Trauma	13%	Male	58.5 ± 11.6
								Female	62.3 ± 11.7

Hand profile		**Operation profile**	Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	4%	*Operation*					
No palm	5%	Local	8%	9%	10%	Local	5%
		Regional	60%	48%	72%	Regional	50%
One ray	27%	Extensive	32%	42%	18%	General	45%
Two rays	31%	Amputation	0%	1%	0%		
Three or more rays	38%						
		Incision				**Procedure at**	
Thumb and thumb web	29%	Longitudinal	73%	92%	85%	**PIP joint**	12%
Index finger	15%	Transverse	27%	8%	15%		
Middle finger	37%					**Complications.**	18%
Ring finger	66%	*Closure*					
Little finger	74%	Suture	73%	87%	88%	**Therapy**	75%
		Open	16%	1%	3%		
		Graft	11%	12%	9%	**Splinting**	43%

Profile P contd. The results of operation by digit and joint recorded 1 year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	142	44.0 ± 25.9	2.1 ± 7.7	149	36.7 ± 19.3	1.9 ± 7.6	76	27.9 ± 14.9	2.0 ± 6.7	19	21.5 ± 11.2	2.6 ± 6.5	11	22.1 ± 11.5	8.2 ± 19.4
Outcome															
Perfect	86%	43.0 ± 24.9	0	88%	35.2 ± 18.6	0	88%	28.3 ± 14.9	0	84%	22.7 ± 11.7	0	82%	21.8 ± 11.5	0
Improved	11%	56.5 ± 30.2	11.2 ± 7.2	11%	49.9 ± 19.8	13.6 ± 12.6	8%	27.2 ± 15.4	15.5 ±9.5	5%	15.0 ± 0	10.0 ± 0	9%	35.0 ± 0	30.0 ± 0
Same/worse	3%	23.7 ± 25.0	31.2 ± 27.8	1%	25.0 ± 21.2	35.0 ± 35.4	4%	20.0 ± 17.3	20.0 ± 17.3	11%	15.0 ± 7.1	20.0 ± 0	9%	12.0 ± 0	60.0 ± 0
PIP joint	132	49.7 ± 25.3	25.2 ± 21.5	71	49.4 ± 28.0	16.4 ± 21.1	16	33.6 ± 21.0	18.3 ± 19.8	7	32.1 ± 17.8	6.4 ±11.8	1	25.0 ± 0	0
Outcome															
Perfect	20%	44.5 ± 25.8	0	45%	39.3 ± 23.8	0	44%	32.1 ± 19.3	0	71%	30.0 ± 19.4	0	100%	25.0 ± 0	0
Improved	56%	60.1 ± 20.8	27.6 ± 16.1	42%	67.7 ± 22.8	28.8 ± 19.0	25%	51.2 ± 23.2	30.0 ± 17.8	14%	50.0 ± 0	15.0 ± 0			
Same/worse	23%	29.4 ± 21.2	41.4 ± 23.1	13%	24.4 ± 19.8	32.9 ± 25.1	31%	21.6 ± 13.6	34.6 ± 13.4	14%	25.0 ± 0	30.0 ± 0			
DIP joint	27	22.7 ± 13.9	8.0 ± 11.2	9	34.3 ± 32.8	8.7 ± 15.5	3	26.7 ± 20.8	16.7 ± 28.9	1	35.0 ± 0	0			
Outcome															
Perfect	59%	17.3 ± 8.7	0	67%	21.7 ± 15.7	0	67%	15.0 ± 7.1	0	100%	35.0 ± 0	0			
Improved	26%	38.3 ± 14.7	16.0 ± 8.6	22%	87.0 ± 4.2	32.5 ± 17.7									
Same/worse	15%	17.0 ± 10.1	25.7 ± 5.7	11%	5.0 ± 0	13.0 ± 0	33%	50.0 ± 0	50.0 ± 0						

Profile Q 406 unilateral patients; 400 operation

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	84%	Male	82%	Right	93%	Right	64%	Manual	48%
Southern European	4%	Female	18%	Left	7%	Left	36%	Non-manual	52%
Japanese	10%					Both	0%		
Black American	1%	**Other areas involved**			19%			**Age at onset (years)**	
Chinese	1%					**Associated diseases**		Male	49.3± 14.6
		Family history			21%	Epilepsy	3%	Female	59.8± 14,3
						Diabetes	3%		
		Previous operation			19%	Alcoholism	5%	**Age at operation (years)**	
						Trauma	17%	Male	55.5± 12.6
								Female	63.3± 10.9

Hand profile		**Operation profile**	Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	8%	*Operation*					
No palm	10%	Local	11%	14%	21%	Local	7%
		Regional	63%	55%	58%	Regional	52%
One ray	49%	Extensive	26%	31%	21%	General	41%
Two rays	30%	Amputation	0%	0%	0%		
Three or more rays	14%						
		Incision				**Procedure at**	
Thumb and thumb web	11%	Longitudinal	76%	80%	89%	**PIP joint**	11%
Index finger	6%	Transverse	24%	20%	11%		
Middle finger	21%					**Complications**	12%
Ring finger	55%	*Closure*					
Little finger	62%	Suture	77%	86%	85%	**Therapy**	78%
		Open	11%	5%	10%		
		Graft	12%	9%	5%	**Splinting**	40%

Profile Q contd. The results of operation by digit and joint recorded 1 year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	64	43.8 ± 22.1	4.6 ±16.3	55	33.9 ± 18.1	1.6 ± 4.8	25	28.1 ± 18.4	0.6 ± 3.0	13	13.3 ± 10.4		0		
Outcome															
Perfect	83%	42.2 ± 21.8	0	87%	32.0 ± 15.9	0	96%	26.5 ± 17.1	0	100%	13.3 ± 10.4	0			
Improved	12%	54.7 ± 13.4	12.1 ± 6.2	11%	52.5 ± 24.8	10.5 ± 3.9	4%	65.0 ± 0	15.0 ± 0						
Same/worse	5%	41.7 ± 41.9	66.7 ± 40.0	2%	15.0 ± 0	25.0 ± 0									
PIP joint	61	53.4 ± 26.8	23.6 ± 21.1	34	45.4 ± 25.8	9.9 ± 12.4	5	27.0 ± 12.0	11.0 ± 11.4	1	97.0 ± 0	5.0 ± 0	0		
Outcome															
Perfect	21%	48.4 ± 19.3	0	53%	44.2 ± 27.1	0	40%	37.5 ± 3.5	0	100%	97.0 ± 0	5.0 ± 0			
Improved	54%	65.5 ± 22.5	26.1 ± 15.2	38%	53.8 ± 22.1	21.3 ± 10.3	40%	25.0 ± 7.1	17.5 ± 10.6						
Same/worse	25%	31.1 ± 26.6	38.5 ± 24.8	9%	16.0 ± 5.3	20.0 ± 5.0	20%	10.0 ± 0	20.0 ± 0						
DIP joint	10	27.3 ± 21.5	6.5 ± 14.2	5	37.0 ± 38.2	0	0			0					
Outcome															
Perfect	70%	24.1 ± 25.0	0	100%	37.0 ± 38.2	0									
Improved	20%	29.5 ± 0.7	10.0 ± 0												
Same/worse	10%	45.0 ± 0	45.0 ± 0												

Profile R 349 patients with one ray involved; 447 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	90%	Male	82%	Right	93%	Right	32%	Manual	49%
Southern European	4%	Female	18%	Left	7%	Left	20%	Non-manual	51%
Japanese	4%					Both	48%		
Black African	2%	**Other areas involved**			20%			**Age at onset (years)**	
						Associated diseases		Male	48.9 ± 14.8
		Family history			25%	Epilepsy	3%	Female	56.9 ± 15.3
						Diabetes	5%		
		Previous operation			22%	Alcoholism	8%	**Age at operation (years)**	
						Trauma	18%	Male	57.1 ± 12.2
								Female	63.9 ± 11.7

		Operation profile				
Hand profile			Palm	Fingers	Thumb	**Anaesthesia**
Palm only	0%	*Operation*				
No palm	9%	Local	9%	10%	60%	Local 7 %
		Regional	65%	51%	10%	Regional 50%
One ray	100%	Extensive	26%	39%	30%	General 43%
Two rays	0%	Amputation	0%	0%	0%	
Three or more rays	0%					
		Incision				**Procedure at**
Thumb and thumb web	3%	Longitudinal	80%	94%	89%	**PIP joint** 10%
Index finger	1%	Transverse	20%	6%	11%	
Middle finger	7%					**Complications** 13%
Ring finger	34%	*Closure*				
Little finger	55%	Suture	81%	81%	90%	**Therapy** 69%
		Open	8%	3%	10%	
		Graft	11%	6%	0%	**Splinting** 41%

Profile R contd. The results of operation by digit and joint recorded 1 year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Posr	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	69	43.6 ± 26.6	3.6 ± 15.4	47	33.7 ± 20.2	1.8 ± 6.8	16	27.4 ± 13.5	0.6 ± 2.5	0			4	17.8 ± 6.8	0
Outcome															
Perfect	88%	43.9 ± 26.3	0	89%	30.7 ± 19.3	0	94%	27.4 ± 13.8	0				100%	17.8 ± 6.8	0
Improved	8%	42.0 ± 26.1	11.0 ± 6.5	9%	61.3 ± 9.5	11.3 ± 7.5	6%	20.01	0						
Same/worse	4%	40.0 ± 43.3	63.3 ± 46.2	2%	40.0	40.0									
PIP joint	97	54.4 ± 23.4	26.8 ± 22.8	28	53.0 ± 27.4	9.6 ± 13.5	7	40.3 ± 31.4	18.6 ± 14.9						
Outcome															
Perfect	18%	45.1 ± 18.2	0	51%	46.5 ± 28.0	0	28%	32.5 ± 10.6	0						
Improved	60%	61.8 ± 21.6	26.9 ± 17.5	43%	61.7 ± 24.9	22.5 ± 11.6	42%	67.3 ± 25.8	31.7 ± 7.6						
Same/worse	22%	41.9 ± 24.9	49.2 ± 21.3				28%	7.5 ± 3.5	17.5 ± 3.5						
DIP joint	22	30.8 ± 17.9	11.4 ± 8.6	2	52.5 ± 53.0	0	0								
Outcome															
Perfect	45%	22.2 ± 15.4	0	100%	52.5 ± 53.0	0	0								
Improved	45%	38.5 ± 18.4	7.5 ± 8.9												
Same/worse	10%	35.0 ± 14.1	37.5 ± 10.6												

Profile S 412 Patients with three or more rays involved; 409 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	81%	Male	86%	Right	95%	Right	13%	Manual	55%
Southern European	2%	Female	14%	Left	5%	Left	7%	Non-manual	45%
Japanese	15%					Both	80%		
Black American	1%	**Other areas involved**			33%			**Age at onset (years)**	
Chinese	1%					**Associated diseases**		Male	46.6 ± 13.5
		Family history			32%	Epilepsy	5%	Female	57.5 ± 14.8
						Diabetes	9%		
		Previous operation			31%	Alcoholism	14%	**Age at operation (years)**	
						Trauma	11%	Male	58.0 ± 11.7
								Female	62.7 ± 13.1

Hand profile		**Operation profile**	Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	0%	*Operation*					
No palm	4%	Local	9%	9%	9%	Local	3%
		Regional	56%	43%	73%	Regional	52%
One ray	0%	Extensive	35%	47%	18%	General	45%
Two rays	0%	Amputation	0%	1%	0%		
Three or more rays	100%						
		Incision				**Procedure at**	
Thumb and thumb web	56%	Longitudinal	62%	90%	81%	**PIP joint**	15%
Index finger	32%	Transverse	38%	10%	19%		
Middle finger	77%					**Complications**	22%
Ring finger	91%	*Closure*					
Little finger	92%	Suture	62%	85%	85%	**Therapy**	76%
		Open	24%	3%	6%		
		Graft	14%	12%	9%	**Splinting**	47%

Profile S contd. The results of operation by digit and joint recorded 1 year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	102	44.3 ± 24.9	2.9 ± 9.2	107	39.2 ± 20.6	3.3 ± 10.5	71	28.6 ± 15.5	3.4 ± 9.5	24	24.5 ± 15.1	5.2 ± 9.7	5	26.7 ± 15.4	12.5 14.7
Outcome															
Perfect	85%	41.4 ± 23.4	0	84%	38.4 ± 20.2	0	85%	28.2 ± 15.0	0	76%	22.4 ± 11.7	0	60%	33.3 ± 15.3	0
Improved	13%	56.3 ± 26.9	14.0 ± 7.5	14%	50.7 ± 21.5	18.7 ± 16.9	10%	35.7 ± 19.7	18.3 ± 8.9	12%	45.0 ± 26.0	20.0 ± 10.0			
Same/worse	2%	40.0 ± 28.3	55.0 ± 7.1	2%	22.5 ± 24.7	35.0 ± 35.4	5%	25.0 ± 17.3	27.5 ± 20.6	12%	16.7 ± 5.8	21.7 ±2.9	40%	12.5 ± 10.6	22.5 ±10.6
PIP joint	85	49.6 ± 26.7	31.7 ± 24.1	56	47.9 ± 27.0	21.7 ± 26.0	23	41.0 ± 21.7	25.3 ± 25.0	18	22.4 ± 11.7	0	0		
Outcome															
Perfect	14%	42.5 ± 24.5	0	43%	41.5 ± 21.7	0	30%	22.9 ± 9.9	0	100%	22.4 ± 11.7	0			
Improved	53%	59.8 ± 22.0	32.1 ± 18.8	39%	65.9 ± 24.2	37.0 ± 22.8	44%	49.5 ± 20.6	35.0 ± 15.8						
Same/worse	33%	31.1 ± 22.6	44.4 ± 24.8	18%	29.5 ± 22.1	40.1 ± 26.9	26%	44.7 ± 24.3	55.0 ± 17.4						
DIP joint	15	21.3 ± 12.7	9.9 ± 11.5	13	29.3 ± 25.5	5.6 ± 12.9	6	18.3 ± 16.0	9.2 ± 20.1	0					
Outcome															
Perfect	46%	12.9 ± 6.9	0	76%	29.0 ± 20.0	0	66%	12.5 ± 5	0						
Improved	27%	36.0 ± 7.8	11.3 ± 4.8	8%	90.0	45.0									
Same/worse	27%	17.0 ± 10.1	27.8 ± 5.7	16%	10.0 ± 7.1	14.0 ± 1.4									

Profile T 276 Patients with onset of disease at 45 years or less; 544 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	87%	Male	95%	Right	92%	Right	28%	Manual	53%
Japanese	8%	Female	5%	Left	8%	Left	4%	Non-manual	47%
Southern European	3%					Both	72%		
Chinese	1%	**Other areas involved**			41%			**Age at onset (years)**	
						Associated diseases		Male	35.9 ± 7.8
		Family history			31%	Epilepsy	5%	Female	37.4 ± 7.8
						Diabetes	4%		
		Previous operation			36%	Alcoholism	12%	**Age at operation (years)**	
						Trauma	18%	Male	49.7 ± 10.2
								Female	53.3 ± 11.7

Hand profile		**Operation profile**	Palm	Fingers	Thumb	**Anaesthesia**	
Palm only	3%	*Operation*					
No palm	7%	Local	5%	7%	9%	Local	3%
		Regional	58%	48%	81%	Regional	51%
One ray	33%	Extensive	37%	44%	10%	General	46%
Two rays	30%	Amputation	0%	1%	0%		
Three or more rays	34%						
		Incision				**Procedure at**	
Thumb and thumb web	27%	Longitudinal	74%	94%	87%	**PIP joint**	13%
Index finger	16%	Transverse	26%	6%	13%		
Middle finger	33%					**Complications**	19%
Ring finger	64%	*Closure*					
Little finger	71%	Suture	71%	82%	84%	**Therapy**	80%
		Open	14%	11%	1%		
		Graft	15%	17%	15%	**Splinting**	43%

Profile T cont'd. The results of operation by digit and joint recorded 1 year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	93	42.5 ± 26.4	3.0 ± 8.9	108	35.5 ± 21.5	3.2 ± 9.4	48	28.1 ± 15.5	2.2 ± 7.9	11	29.4 ± 18.7	4.5 ±10.4	9	22.8 ± 13.7	8.3 ±13.2
Outcome															
Perfect	83%	40.5 ± 25.3	0	82%	32.9 ± 20.6	0	88%	27.9 ± 14.0	0	82%	22.6 ± 12.4	0	67%	24.1 ± 14.3	0
Improved	15%	51.1 ± 26.0	18.2 ± 15.1	13%	56.6 ± 15.4	18.6 ± 15.8	10%	29.7 ± 24.1	11.0 ± 5.5	18%	60.0 ± 0	25.0 ± 7.1			
Same/worse	2%	10.0 ± 7.1	12.5 ± 10.6	4%	17.5 ± 15.5	21.3 ± 14.3	2%	40.0	50.0						
PIP joint	107	57.4 ± 23.7	30.4 ± 26.4	59	52.6 ± 27.2	20.1 ± 22.2	26	40.3 ± 23.5	23.5 ± 22.4						
Outcome															
Perfect	22%	46.6 ± 23.4	0	36%	40.7 ± 23.3	0	31%	26.9 ± 16.0	0						
Improved	54%	63.3 ± 21.8	30.7 ± 18.5	49%	69.0 ± 21.8	27.7 ± 17.4	46%	52.7 ± 20.3	27.5 ± 13.2						
Same/worse	23%	48.1 ± 21.1	59.0 ± 22.0	5%	32.0 ± 20.2	42.8 ± 25.8	23%	33.3 ± 27.9	46.7 ± 23.6						
DIP joint	26	30.4 ± 17.7	7.9 ± 10.6	14	33.3 ± 28.4	4.6 ± 12.8	5	20.0 ± 17.3	11.0 ± 21.9						
Outcome															
Perfect	58%	22.3 ± 12.9	0	86%	26.3 ± 19.9	0	60%	13.3 ± 5.8	0						
Improved	38%	44.8 ± 16.4	17.7 ± 6.9	14%	87.0 4.2	32.5 ± 17.7									
Same/worse	4%	10.0	30.0												

Profile U 246 Patients with previous operation; 323 operations

Family origin		**Sex**		**Hand dominance**		**Hand involved**		**Occupation**	
Northern European	90%	Male	85%	Right	95%	Right	14%	Manual	52%
Japanese	5%	Female	15%	Left	5%	Left	11%	Non-manual	48%
Southern European	3%					Both	75%		
Chinese	2%	**Other areas involved**			40%			**Age at onset (years)**	
						Associated diseases		Male	41.8 ± 14.0
		Family history			36%	Epilepsy	5%	Female	51.1 ± 16.1
						Diabetes	5%		
		Previous operation			100%	Alcoholism	12%	**Age at operation (years)**	
						Trauma	18%	Male	54.9 ± 11.5
								Female	61.9 ± 11.0

Hand profile		**Operation profile**	**Palm**	**Fingers**	**Thumb**	**Anaesthesia**	
Palm only	3%	*Operation*					
No palm	13%	Local	10%	8%	9%	Local	3%
		Regional	57%	46%	71%	Regional	51%
One ray	31%	Extensive	33%	43%	20%	General	46%
Two rays	27%	Amputation	0%	3%	0%		
Three or more rays	39%						
		Incision				**Procedure at**	
Thumb and thumb web	36%	Longitudinal	76%	94%	93%	PIP joint	22%
Index finger	20%	Transverse	24%	6%	7%		
Middle finger	36%					**Complications**	16%
Ring finger	55%	*Closure*					
Little finger	79%	Suture	70%	77%	92%	**Therapy**	73%
		Open	9%	1%	0%		
		Graft	21%	22%	8%	**Splinting**	45%

Profile U contd. The results of operation by digit and joint recorded 1 year ± 6 months after operation

	Little finger			Ring finger			Middle finger			Index finger			Thumb		
	n	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post	*n*	Pre	Post
MP joint	53	46.5 ± 26.8	4.3 ± 11.2	49	40.0 ± 24.0	5.1 ± 12.9	26	28.3 ± 18.7	4.8 ±11.5	5	36.0 ± 24.3	15.0 ±14.1	5	14.0 ± 10.8	10.0 ±12.7
Outcome															
Perfect	80%	42.7 ± 25.5	0 ± 0	78%	34.3 ± 23.3	0 ± 0	76%	28.2 ± 18.3	0 ± 0	40%	20.0 ± 21.2	0 ± 0	40%	20.0 ± 14.1	0 ± 0
Improved	20%	52.2 ± 27.4	21.5 ±16.7	18%	60.0 ± 19.6	23.1 ± 19.6	20%	29.0 ± 24.0	14.0 ± 8.2	40%	60.0 ± 0	25.0 ± 7.1			
Same/worse				4%	22.5 ± 24.7	25.0 ± 21.2	4%	40.0 ±	50.0 ±	20%	20.0 ± 0	25.0 ± 0	60%	10.0 ± 8.7	16.7 ± 12.6
PIP joint	75	60.2 ± 23.3	34.2 ± 25.8	34	52.5 ± 24.8	25.2 ± 25.1	22	47.8 ± 21.3	25.0 ± 24.1	11	34.1 ± 18.0	22.3 ±14.2	1	70.0	10.0
Outcome															
Perfect	15%	49.1 ± 25.1	0 ± 0	36%	44.6 ± 21.6	0 ± 0	29%	25.8 ± 8.6	0 ± 0	9%	25.0	0			
Improved	52%	67.3 ± 20.6	33.1 ± 20.8	45%	66.6 ± 21.9	35.9 ± 20.2	57%	54.3 ± 19.4	26.7 ± 12.7	55%	46.7 ± 14.7	24.2 ±11.1	100%	70.0	10.0
Same/worse	27%	46.3 ± 18.5	55.1 ± 20.1	18%	40.0 ± 20.2	49.2 ± 18.8	14%	61.7 ± 20.8	68.3 ± 14.4	36%	17.5 f 2.9	25.0 ± 16.8			
DIP joint	17	33.8 ± 16.6	11.7 ± 12.2	10	27.0 ± 18.3	1.7 ± 5.0	3	10.0 ± 0	1.7 ± 2.9	1	20.0	35.0			
Outcome															
Perfect	40%	26.7 ± 14.7	0 ± 0	89%	30.6 ± 18.8	0 ± 0	66%	10.0 ± 0	0 ± 0						
Improved	53%	41.3 ± 18.1	18.8 ± 7.4				33%	10.0	5.0	100%	20.0	35.0			
Same/worse	7%	25.0	30.0	11%	15.0	15.0									