

DOI: 10.5455/medarh.2012.66.329-331

Med Arh. 2012 Oct; 66(5): 329-331

Received: August 01st 2012

Accepted: September 21st 2012

CONFLICT OF INTEREST: NONE DECLARED

ORIGINAL PAPER

Results of Surgery Treatment of Dupuytren's Contracture in 115 Patients

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Introduction: Dupuytren's disease (DD) is a progressive fibroproliferative disorder of the hand causing digital flexion contracture. Treatment goals include removing or releasing the fibrotic cord to allow extension of the affected finger(s) and restoration of hand function. **Material and Methods:** In study period from 2001 through 2008, evaluation was performed in 115 patients. Limited or extensive fasciectomy was performed in all patients. Tubiana classification scheme to rate severity of DD was used. **Results:** There were 106 male patients (mean age 62.6 years) and 9 female patients (mean age 66.3 years). Before the operation, 38% of all patients were at Tubiana stage I, 32% were at stage II, 22% were at stage III and 8% were at stage IV. Of all patients, 43% were diagnosed with Dupuytren's in only one finger, 39% in two fingers and 18% in three fingers. In 23% of patients DD were diagnosed on both hands. Limited fasciectomy was performed in 90,4% of patients and extensive fasciectomy in 9,6% of patients. The Tubiana stage achieved after surgery was lower in 98% of patients. As a final result after surgery, 66% of patients didn't have contracture, stage I was reported in 28% and stage II in 3% of patients. There were no patients with Tubiana stage III or more after surgery. Postoperative complications were noted in 18% of patients. Wound healing problems were present in 12% of patients. Haematoma was reported in 5% of patients. Of all patients 22% had diabetes mellitus. **Conclusion:** DD is much more common in male than in female patients. Most of the patients are diagnosed at Tubiana stage I and II. Surgical correction has led to an improvement in most patients. Limited fasciectomy is still the gold-standard in DD treatment. Extensive fasciectomy or dermofasciectomy is performed only in most severe cases. **Key words:** Dupuytren's disease, Fasciectomy, Contracture.

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1. INTRODUCTION

Dupuytren's disease (DD) is a progressive fibroproliferative disorder of the hand causing digital flexion contracture, with abnormal "scar-like" tissue in the palmar fascia (1). DD is more common in older men and in patients with diabetes (2, 3). Severity of the DD is often based upon measurement of flexion deformity.

There is a wide range of treatment options for patients with Dupuytren's contracture. Treatment goals include removing or releasing the fibrotic cord to allow extension of the affected finger(s) and restoration of hand function.

Surgical procedures include limited fasciectomy, fasciotomy, percutaneous needle fasciotomy, dermofasciectomy and in most severe cases even

finger amputation (4-7). The type of approach used depends on many factors, like patient age, comorbid conditions and severity of disease (8). While counselling patients, one should give a realistic picture of the advantages and disadvantages of the different treatment options.

The ideal treatment is one, which is quick to perform, has little risk of complications, allow early recovery of hand function with the least possible comorbidity, and the longest possible disease-free period.

2. PATIENTS AND METHODS

In study period from 2001 through 2008, evaluation was performed in 115 patients with adequate follow-up. There were 106 male patients (age range 36–81 years; mean age 62.6 years) and 9 female patients (age range 54–78 years; mean age 66.3 years). In all patients we included in the study, DD have been diagnosed and all patients undergone a surgical procedure for the disease.

All of operative procedures on patients with DD were performed by plastic surgeons. Limited or extensive fasciectomy was performed in all patients, depends of severity of DD (Figure 1,2,3).

Tubiana classification scheme to rate severity of DD was used (Table 1) (9). Tubiana classification scheme is widely used from many authors (10,11). We used night type of splints in 1 month postoperatively.

All the patients were followed up regularly for three years, for the assessment of results of treatment and development of complications.

| Stage Deformity | |
|-----------------|---|
| 0 | No lesion |
| N | Palmar nodule without presence of contracture |
| 1 | TFD between 0° and 45° |
| 2 | TFD between 45° and 90° |
| 3 | TFD between 90° and 135° |
| 4 | TFD greater than 135° |

Table 1. Original staging of DD introduced by Tubiana (9). Total flexion deformity (TFD) is measured with a goniometer at the metacarpalphalangeal, proximal, and distal interphalangeal joints.



Figure 1. Z-plasty is safe, simple procedure which allows maximum skin viability and earliest mobilisation.

3. RESULTS

At the operation, 44 (38%) of all patients were at Tubiana stage I, 37 (32%) were at stage II, 25 (22%) were at stage III and 9 patients (8%) were at stage IV (Table 2). Of all patients, 49 (43%) were diagnosed with Dupuytren's in only one finger, 45 (39%) in two fingers and 21 (18%) in three fingers. In

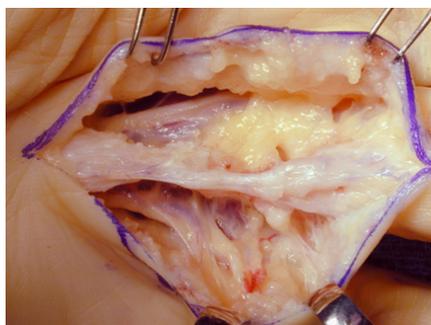


Figure 2. Limited fasciectomy: In this procedure only diseased fascia is removed. In the palm, this involves excision of the diseased pretendinous cords and parts of the natatory ligament. In the finger, only those fascial that are obviously diseased are removed.



Figure 3. Dupuytren's contracture of the fifth finger

26 patients (23%) DD were diagnosed on both hands.

Limited fasciectomy was performed in 104 patients (90,4%), 95 male and 9 female, and extensive fasciectomy in 11 patients (9,6%).

The Tubiana stage achieved after surgery was lower in 113 patients (98%), in 2 (2%) patients Tubiana stage were the same after surgery. We didn't have more severe case after surgery (Figure 4).

As a final result after surgery, in 76 patients (66%) there were no contracture, stage I was reported in 32 patients (28%) and stage II in 7 (3%) of patients. There were no patients with Tubiana stage III or more after surgery (Table 3). Statistical analysis by chi-square test shows significant improvement in stage of finger after the surgery ($\chi^2=12,354; p=0,0001$).

It was reported two digital artery injuries during the procedures. In both cases dermo-fasciectomy procedure was performed. There was no reports about digital nerve injury, or other complications during the operative procedure.

Postoperative complications were noted in 18% of patients (Table 4). Wound healing problems were the most frequent complication in the postoperative period and it occurs in 14 (12%) patients. Haematoma was reported in 6 (5%) patients. Lokal wound infection was present in only one patient.

Of all patients 25 (22%) had diabetes mellitus as a risk factor. Three years after the first surgery 11 patients underwent another surgery for DD. Only one patient had a recurrence on the same finger. The four patients had a procedure on another finger because of disease progression, and six patients had

surgical procedure on the other hand for the DD.

As for postoperative complications from 21 patients with complications, in patients with first degree complications were present in 5 cases, patients with second degree in 7 cases, in pa-

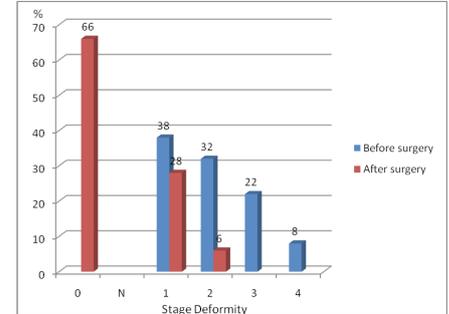


Figure 4. Comparing stage of finger before and after surgery by Tubiana (percentage view)

tients with third degree of deformity in 6 cases and in patients with fourth stage of deformities in three cases. (Table 4). Statistical analysis by Spearman rank correlation indicates highly statistical significant correlation with stage of de-

| Stage Deformity | 0 | N | 1 | 2 | 3 | 4 |
|--------------------|---|---|-----|-----|-----|----|
| Number of patients | - | - | 44 | 37 | 25 | 9 |
| Percentage | - | - | 38% | 32% | 22% | 8% |

Table 2. Tubiana stage of the finger prior surgery

| Stage of Finger after surgery | 0 (No deformity) | I | II | III | IV |
|-------------------------------|------------------|-----|----|-----|----|
| Number of patients | 76 | 32 | 7 | - | - |
| Percentage | 66% | 28% | 6% | - | - |

Table 3. Tubiana stage of the finger after surgery

| Stage Deformity | 0 | N | 1 | 2 | 3 | 4 |
|-------------------------|---|---|----|----|----|---|
| Number of patients | - | - | 44 | 37 | 25 | 9 |
| Number of complications | - | - | 5 | 7 | 6 | 3 |

Table 4. Complications reported after operative treatment

formity and the number of complications ($\rho=0,753; p=0,0001$).

4. DISCUSSION

In this study it was reported much more male patients than female (male-to-female ratio 12:1). Epidemiological studies have reported different gender ratios in DD that depending upon the geographical area. Population studies conducted in northern Europe, Australia and United States have shown that

DD is less common in women, with reported overall male-to-female ratios ranging from 3:1 to 9.5:1 (12). In a patients with diabetes, DD is a frequent condition (3). Some authors reported a 30% frequency rate of diabetes melitus in patients with DD (11). In this study 22% of patients had diabetes mellitus.

Surgical correction has led to an improvement in most patients regardless it was partial or extensive fasciectomy (Figure 4). Other authors reported succesful surgical correction for DD (4,5,7). More aggressive correction was performed in more difficult cases. In this study limited fasciectomy was performed in most cases, and extensive fasciectomy or dermofasciectomy only in most severe cases. In most countries limited fasciectomy is the most frequently practiced treatment for Dupuytren's disease. Only abnormal tissues are excised while care is taken to preserve unaffected fascia and neurovascular bundles. This intervention is indicated for painful nodules that do not respond to conservative measures (padded gloves) or for progressing contractures of at least 30° in one of the joints. The treatment should preferably be performed before a contracture of 60° has developed. PIP joint contracture greater than 60° is more difficult to correct, because it may be accompanied by contracture of the checkrein and collateral ligaments and by lengthening of the extensor mechanism (13). So, it can be concluded that the surgical correction is the method of choice in the treatment of DD.

Most of wounds were closed by primary closure with z-plasty where ever it was possible, without putting undue tension on suture line. In rest of the patients full thickness-skin grafts were used to close the wound, when primary closure was not possible. These grafts were placed on the palm as well as over the proximal phalanges. Graft take rate was 100% and post operative functionality was comparable to patients wherein no grafts were used.

Hand therapy is prescribed to optimize the hand function after surgery and prevent the patient from joint stiffness. Besides the hand therapy, many surgeons advise the use of static or dynamic splints after surgery to maintain

the extension of the finger achieved through surgery. The splint is used to provide prolonged stretch to the healing tissues and prevent flexion contractures. Although splinting is a widely used post-operative intervention, the evidence on the effectiveness remains scarce (14). Due to this lack of high quality evidence, there is lots of variation in the way of splinting. Most of the surgeons decide on clinical experience and personal preference whether to use a splint or not (15). In this study it was used night type of splints in 1 month postoperatively.

It was reported only two intraoperative complications, two digital arteries were cut. All the surgical operations were performed by the well trained plastic surgeons with great experience in microsurgery. So, in both cases surgeons have put the stitches on the blood vessels and make them functional again. It is of great importance that such surgical operations performed well trained plastic surgeons. Postoperative complications had 18% of patients with wound healing problems as a major problem. Wound healing problems and wound infection were mostly occurs in patients with diabetes mellitus. Complications were more frequent owing to the severity of disease. Other authors had similar complication rate (10,13,14,15).

Only one patient in this study was reoperated within 3 year because of a recurrence of contracture in the same finger. Other 10 patients were operated because of progression of DD or DD on the other hand. A wide range of recurrence rates is reported in the literature (4,7). In this study it is reported only one case of recurrence which was reoperated. The reason for this low recurrence rate we can find in fact that the recurrence occur most often between 3.3 and 4.4 years after surgery, and the evaluation period in this study was 3 years (4). Some patients may didn't come in same hospital or the patient were satisfied with functional limitations that occurred. Therefore, some cases of recurrence may have been missed.

5. CONCLUSIONS

DD is much more common in male than in female patients. Most of the pa-

tients are diagnosed at Tubiana stage I and II. Surgical correction has led to an improvement in most patients regardless it was partial or extensive fasciectomy. After operative procedure preformed better result was achieved in 98% of patients. Limited fasciectomy is still the gold-standard in DD treatment. Extensive fasciectomy or dermofasciectomy is preformed only in most severe cases. In any case patient should have a realistic picture of the advantages and disadvantages of the different treatment options. Surgeons who perform fasciectomies for Dupuytren's disease should keep in mind the possible intraoperative and postoperative complications and should counsel their patients accordingly.

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