

# Recurrence of Dupuytren's disease following surgery – an analysis of the causes and incidence

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## ABSTRACT

The incidence of recurrence Dupuytren's disease after surgery is estimated up to 50% in relation to progression of the disease, treatment modality and time of the follow-up. The objective of this study was an analysis of the causes and frequency of recurrences among 67 patients following surgery for recurrent Dupuytren's disease in the author's institution in the years 2016–2018. The 67 patients comprised 56 men (83%) and 11 women (17%) at a mean age of 59 years (range 40–81), of which 27 patients (40%) had undergone a 2nd operation to the same hand, 22 patients (33%) had undergone a 3rd operation, 14 (21%) had undergone a 4th operation, and the remaining 4 patients had each undergone more than 5 operations on the same hand. The

defined rate of recurrence in the analysed period was 20%. The mean time interval from the last operation and the appearance of signs of a relapse was 14 months; in 42 patients (63%) it was less than 1 year (3–12 months) and in the remaining 25 (37%) 1–4 years. Progressing contracture of the previously operated finger and contracture of the adjacent finger which was not involved at the 1st operation, was the most frequently observed pattern of recurrence, found in 29 patients; it was a combination of true recurrence and extension of the disease. The number of operations performed in a given patient was found to be a statistically significant risk factor of recurrence.

**Keywords:** Dupuytren's disease; surgery; recurrence after operation; cause of recurrence.

## INTRODUCTION

Operations for Dupuytren's disease are frequently performed in hand surgery. In the authors' institution, an average of 150 patients are operated on each year for Dupuytren's disease. Currently 2 techniques are employed for this surgery: a standard method (partial fasciectomy), and a percutaneous method (needle fasciotomy) [1, 2, 3]. In a partial fasciectomy, the affected palmar fascia is subtotally resected using relatively large zig-zag incisions in the palm. In the needle fasciotomy, the palmar fascia is not removed and the surgery is limited to a section of the Dupuytren cord in the palm or finger with a needle, thus releasing the finger contracture. It is a mini-invasive method, without a skin incision, which allows the patient to return to normal activity the day after surgery.

Recurrence is common after surgery for Dupuytren's disease, arising from several patient and disease related risk factors. Early onset of the disease and involvement of the radial digits (thumb and index finger) are considered factors propitious to recurrence. According to the current understanding of the term "recurrence" in Dupuytren's disease, 2 main patterns (forms) are distinguished [4]. The 1st (true recurrence) is defined as a progressive contracture of the previously operated finger. Nodules and cords are present usually in the scar in the affected finger. The 2nd pattern (new manifestation, extension) is described as a progressing contracture of a (normal) finger not involved at the time of the previous surgery. In this form, nodules and cords are

present separate from the previously operated finger. This problem will be mentioned more detailed in the Discussion below. Interestingly, the relapse rates after standard surgery (fasciectomy) and needle fasciotomy do not differ significantly [2, 3, 5]. The objective of this study was an analysis of the causes and incidence of recurrence following surgery for Dupuytren's disease.

## MATERIALS AND METHODS

A retrospective chart review was conducted on patients in the author's institution who had undergone surgery for recurrent Dupuytren's disease in the years 2016–2018. A total of 438 patients were operated on over this period, of which 88 (20%) were due to recurrence. Data from these 88 patients were collected and a questionnaire mailed to them, consisting of several questions, such as age at the onset of the disease, location of the recurrence (site of the 1st operation or outside it), time between surgery and the 1st signs of relapse, number of operations undergone to date, problems with wound healing, presence of concomitant diseases (particularly diabetes). Data from 67 patients (76%) were received: 58 questionnaires were returned and 9 phone interviews were performed. Twenty one patients (24%) did not respond to the invitation.

The data were analysed and the statistical significance calculated by Mann-Whitney U tests for a non-normal distribution of variables. Statistical significance was assumed at  $p < 0.05$ .

## RESULTS

A cohort of 67 patients, 56 men (83%) and 11 women (17%), mean age of 59 years (range 40–81), suffering from recurrent Dupuytren's disease were enrolled in this study. At the initial surgery, 63 patients (94%) received partial fasciectomy and 4 (6%) received needle fasciotomy. Twenty seven patients (40%) underwent a 2nd operation to the same hand, 22 patients (33%) underwent a 3rd operation to the same hand, 14 (21%) underwent a 4th operation to the same hand, with 4 patients undergoing a 5th, 6th, 11th and 15th operation respectively to the same hand. The number of patients with specific clinical patterns (forms) of recurrence is shown in Table 1. Progressing contracture of the previously operated finger and contracture of the adjacent finger not involved at the initial operation, were the most frequently observed patterns of recurrence, as experienced by 29 patients (44%).

According to the definition of recurrence, these cases present combinations of true recurrences and new manifestations (extension) of the disease. In 21 patients it was purely a new manifestation, in 13 it was a true recurrence, and in 4 patients, the relapse presented as nodules on the palm but without finger contracture.

In 42 patients (63%), recurrence involved both hands, for 21 patients (31%) just the right hand, and for 4 (6%), just the left hand.

The time interval from the previous surgery and signs of a relapse was on average 14 months; in 42 patients (63%) it was less than 1 year (3–12 months), and in the remaining 25 (37%) 1–4 years.

The patients were asked about results of the surgeries in terms of the status of their operated fingers. Forty-six patients (69%) reported a complete release of the contracture (full extension of the fingers), while 21 (31%) reported some residual contracture, of which 21 patients considered the recurrence as a direct consequence of incomplete release of the contracture. In 61 patients (91%), the operative wound healed uneventfully, while in 6 (9%), healing was disturbed by haematoma or infection, resulting in an average delay in wound closure of 2 weeks.

The patients with recurrence noticed the 1st signs of Dupuytren's disease at an average age of 46 years (range 31–70). Ten patients had diabetes mellitus; 6 were receiving insulin and 4 were taking oral anti-diabetic medication.

**TABLE 1.** Pattern of recurrence of Dupuytren's disease in patients from the study group

Pattern of recurrence	Number of patients	%
Simultaneous contracture of previously operated finger and adjacent non-operated finger (combined pattern)	29	44
Contracture of the adjacent, non-operated finger (extension)	21	31
Contracture of the previously operated finger (true recurrence)	13	19
Presence of nodules on the palm but without finger contracture	4	6
Total	67	100

Statistical analysis with Mann–Whitney U tests showed one statistically significant relationship, between recurrence and the number of operations performed ( $p = 0.02$ ), where more recurrence led to more operations. Recurrence was not statistically significantly related to any of the other considered variables: age of the onset of the disease, interval between last operation and recurrence, complicated wound healing or diabetes ( $p > 0.05$ ).

## DISCUSSION

Recurrence rate following surgery for Dupuytren's disease is high, reaching even 50% in 10-year perspective [3, 4, 5]. This arises from several patient, disease and treatment related risk factors. A standard operation (partial fasciectomy) consists of resection of only the affected part of the palmar fascia. The remaining healthy fascia may over time convert to Dupuytren's tissue and cause contracture of the corresponding finger. This pattern of recurrence is called a "new manifestation" or "extension" of the disease (actually is not a recurrence, but is counted among it). It is obvious that more excessive resection of the palmar fascia, even its healthy parts, reduces the risk of extension of the disease. Conversely, aggressive operations within the palm are associated with a higher rate of complications, a longer time of recovery and return to normal activity or work and, therefore, are scored worse by the patients.

Current trends in the treatment of Dupuytren's disease favour rather mini-invasive techniques such as needle fasciotomy or collagenase injections, which offer a quick return to normal daily activities. They may, however, hypothetically be associated with a higher risk of relapse; nevertheless, these methods are preferred by the patients. In the present study, the number of the patients with the recurrence treated either by partial fasciectomy or needle fasciotomy differs significantly, as the latter technique was only introduced in the author's institution from 2015. Thus, the vast majority of the patients prior to 2015 had undergone the classical type of surgery – partial fasciectomy.

The 2nd cause of a high risk of recurrence is incomplete resection of the affected palmar fascia, providing a direct (anatomic) ground for re-growing of the tissue. This factor is associated with imperfect operative technique, in particular in leaving nodule fragments in the fingers. It should be remembered that even if the contracture is confined only to the metacarpo-phalangeal joint of the finger, bands of the palmar fascia pass distally as far as the middle phalanx, thus crossing the proximal interphalangeal joint (PIP). Therefore, if a nodule is touched in the proximal phalanx, the operation should include excision of the fascia from the proximal and middle phalanx too, even if it looks apparently normal. Omitting this is a relatively common cause of recurrence, present as a contracture of the finger in the PIP joint (there were 6 such cases in analysed patients).

Another form of relapse is invasion of the palmar skin by aggressively growing palmar fascia [4]. This occurs relatively

infrequently, but if does, it needs excision of the involved skin in one-block with the affected fascia, followed by skin grafting of the defect (alternatively it can be left for secondary healing). Leaving Dupuytren's tissue attached to the skin may result in local recurrence, however it rarely causes finger contracture, thus, it may not be considered recurrence.

Dupuytren's diathesis is the next cause of frequent relapses of the condition. This particular "malignant" form of the disease is characterised by early onset (frequently at the age of 30 years), involvement of multiple digits (including the thumb and index finger), rapid progression of contractures and invasion of the palmar skin. Patients suffering from this form of the disease tend to develop true relapses and new manifestations, involving frequently atypical locations such as the thumb and index finger. Outcomes of classical surgery are poor, resulting in frequent recurrences, multiply operations and development of a permanent disability. An alternative option in these patients is dermatofasciectomy – radical excision of the entire palmar fascia and overlying palmar skin, followed by coverage of the resected area with a skin graft. Four such patients were found in the analysed group, who had undergone 5–15 operations on their hands.

The definitions and criteria of diagnoses of recurrence following surgery for Dupuytren's disease are not consistent. Several definitions have been proposed on what can be considered recurrence and what should not [6, 7]. It is in general agreement that any recurrence of Dupuytren's disease should be located in the operated area, to differentiate true recurrence from disease extension to other joints. Since the disease can affect multiple joints and fingers, and both hands, recurrence should be assessed in all treated joints, fingers and hands. The next criterion concerns the presence of nodules and cords on the palm. It has been suggested that these should not explicitly be considered a recurrence if no joint contracture is present. A recurrent joint contracture of at least 20 degrees in one joint is needed for counting a particular case as a recurrence. A 3rd criterion is the timing of baseline measurements and follow-up.

It is suggested that recurrence should be measured min. 1 year after surgery and should be compared to a baseline measurement, a few weeks after surgery. As it is shown, the diagnosis of recurrence following surgery for Dupuytren's disease is not as easy as it appears. One of the consensus statements about the recurrence of Dupuytren's disease defines it as: "an increase in joint contracture in any treated joint of at least 20 degrees at 1 year post-treatment compared to 6 weeks post-treatment, irrespective of the presence of palpable cords or nodules" [6].

In summary, the results of this study show recurrence of Dupuytren's disease in 20% of patients, with the majority of those in a combined form of true recurrence and disease extension, and at the time less than 1-year post-treatment. The number of operations performed in given patient was found to be a statistically significant risk factor of recurrence.

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