



PERCUTANEOUS FASCIOTOMY OF DUPUYTREN CONTRACTURE: A CASE SERIES

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ABSTRACT

Background: Dupuytren's disease is a fibroproliferative disease affecting palmar aponeurosis characterized by collagen deposition, causing a flexion contracture of the metacarpophalangeal and interphalangeal joints and ultimately affecting hand function and grip strength. There is no cure for it, but most patients can gain significant functional improvement following corrective surgery. Here we are studying the effectiveness of percutaneous fasciotomy in Dupuytren's contracture. **Methods:** Five patients having Dupuytren's contracture with functional impairment were underwent percutaneous fasciotomy. They were followed up at the end of 1 week, 1 month, 3 months and the outcome were measured with reduction in extension deficit. **Result:** There was reduction of extension deficit in all cases immediately after release. The improvement almost persists at all follow up. **Conclusion:** Percutaneous fasciotomy is for Dupuytren's contracture is a simple procedure with very minimum complications and chances recurrence.

KEYWORDS

Dupuytren's disease, hand function, percutaneous fasciotomy, extension deficit

INTRODUCTION

Dupuytren's disease is a fibroproliferative disease characterised by collagen deposition ultimately affecting hand mobility and grip strength.¹ It involves the palmar aponeurosis and the fingers, causing a flexion contracture of the metacarpophalangeal and interphalangeal joints. The most frequently affected digits are the ring and little finger.^{2,3} The prevalence of this disorder is in the range of 2% to 42% and it affects men more than women at a younger age, but the sex predisposition diminishes with age.^{4,5} In addition, there is bilateral involvement in 59% of affected men *versus* 43% of women.⁶ Prevalence of the disease in people aged 55 years is 12%, rising to 29% at 75 years.⁷

The disease has been described in four stages. Early stage, Active or proliferative phase, Advanced or involution phase, Residual phase. In early stage pathognomonic lesion is a painless and insensitive nodule at the level of the distal palmar fold. In this stage of the disease, the common type 1 collagen usually found in hand tissues is replaced by type 3 collagen, which is a main component of reticular fibres.⁸ The pathognomonic lesion of DC are nodules on the bands of the palmar aponeurosis which, as the disease progresses, develop into cords that cause continuous flexion of the digit involved. DC has a predilection for the right hand, which is affected in 60% of the cases.⁹

Although the aetiology of the disease is not clearly established, observational studies have identified several associations with metabolic diseases such as diabetes and hypothyroidism, trauma, alcohol use, cigarette smoking, and even epilepsy.¹⁰

There is no cure for Dupuytren's disease, but most patients can gain significant functional improvement following corrective surgery, which is the mainstay of treatment. Indeed, hand function is worsened by increasing deformity in Dupuytren's disease and improved by correction of the deformity.^{11,12} Fasciotomy, either open or percutaneous are the surgical procedure. There are few non-surgical options like Corticosteroid injections which sometimes used to treat painful nodules. The medication is injected directly into the affected area.¹³ Radiotherapy has also been used to prevent disease progression for early stage Dupuytren's disease.¹⁴ Non-surgical enzymatic fasciotomy using clostridial collagenase injection into the affected area has shown encouraging clinical results in early trials but is not yet available.¹⁵

MATERIAL AND METHODS

Five patients having dupuytren's contracture with functional

impairment were included in the study. After taking written consent Percutaneous Fasciotomy was performed using no.11 surgical blade under local anaesthesia. Three to four puncture wounds were made on the ulnar side of diseased palmar fascia at different levels, along the cord. Through these puncture wounds a no.11 surgical blade was inserted below skin but superficial to the palmar fascia. Fingers were extended to tighten fascia and the cords were divided by gently pressing the blade onto the tense cords. Whenever cord was divided the sense of gritty, firm resistance disappeared. Pressure dressing was applied for 24 hours. Patient was given analgesics and antibiotic for 5 days. Range of motion exercises of hand and fingers were started from the next day and stretching exercises advised after one week. Patient were followed up at the end of 1 week, 1 month, 3 months and the outcome were measured with reduction in extension deficit.

RESULT

Three patients were males and 2 patients were females and all of them were having diabetes mellitus. All of them were above 50 years of age. None was below 40 years of age. Dominant hand was involved in 3 patients. Both female patients were home makers and males were farmer and manual labourer. The demographic features of the patients were given in table 1.

Table 1. Demographic Features Of The Patients

Case	Age (years)	Gender	Duration (years)	Side	Affected fingers	Extension deficit (degree)
1	56	Male	3	Right	Little finger	30
2	64	Male	5	Left	Little finger	60
					Ring finger	30
3	56	Female	2	Left	Ring finger	40
4	72	Male	5	Right	Little finger	60
					Ring finger	40
5	54	Female	1	Right	Ring finger	30

Table 2. Extension Deficit At Different Follow Up

Case	Affected finger	Pre-procedure	Immediate post procedure	1 week	1 month	3 months
1	Little finger	40	nil	10	10	10
2	Little finger	70	10	20	20	20
	Ring finger	30	nil	nil	nil	nil
3	Ring finger	40	nil	nil	nil	nil

4	Little finger	60	10	10	10	10
	Ring finger	40	nil	nil	nil	nil
5	Ring finger	30	nil	nil	nil	nil

There was reduction of extension deficit in all cases immediately after release. The improvement persists at 1 week, 1 month and 3 months follow up with 2 of them showing mild increase in extension deficit from the immediate post procedure condition (table 2)



Image 1: Percutaneous Fasciotomy performed in a patient with dupuytren's contracture involving little finger

DISCUSSION

There is no cure for dupuytren's contracture, but surgical release by fasciotomy can give significant improvement in hand function. In this study all the 5 patients show improvement in extension deficit immediately after the procedure. One month and 3 months follow up also shows a significant improvement in extension deficit compared to preoperative stage, but shows a minimal increase in extension deficit compared to immediate postoperative stage in 2 cases. This can be due inadequate stretching exercise of the affected fingers by those patients. A study conducted by Stromberg J et al also shows significant improvement (<5-degree extension deficit) in 90 percent patients 1 week after procedure and the improvement were persisting even after 1 year.¹⁶ Similar results which are long lasting are seen in other studies also.

There were no much complication following percutaneous fasciotomy except for pain and swelling which are expected after surgical procedure and the same were controlled by nonsteroidal anti-inflammatory medications. There were no history of uncontrolled bleeding, infection, or delay in wound healing in any of those patients. Further study of percutaneous fasciotomy in DC has to be conducted with larger sample size and longer follow up for better understanding of efficacy and complications of the procedure.

CONCLUSION

Percutaneous fasciotomy is simple procedure for dupuytren's contracture. Although it is associated with chances of recurrence but when done properly it gives excellent results with very minimum complications.

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