

# Percutaneous Fasciotomy in the Management of Dupuytren's Contracture

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## ABSTRACT

**Introduction:** Dupuytren's disease is a proliferative fibroplasia of the palmar fascia of the hand and fingers, resulting in progressive thickening and shortening of the palmar fascia. This results in the formation of cords, flexion deformities of the digits, and ultimately loss of range of motion, especially loss of finger extension. In 1777 Henry Cline was first to introduce operative management of DC in the form of percutaneous fasciotomy. The pathological cords were released by him using bistoury knife after making stab incisions. However this technique had high recurrence rates which led to the introduction of radical fasciectomy, and later to more limited fasciectomy.

**Material and methods:** 10 patients with dupuytren's contracture of more than 6 months duration with functional impairment were included in the study. After taking written consent patients were operated under local anaesthesia. Percutaneous Fasciotomy was performed using pointed scalpel. Post-operatively a pressure dressing was applied for 24 hours, then a small dressing was applied. Immediate range of motion exercises of hand and fingers were started.

**Results:** At 6 months follow-up only 1 patient had recurrence of contractures involving little and ring fingers, two patients had development of mild degrees of contracture but functionally there was significant improvement. In 7 patients results were excellent with complete regression of the lesions and complete functional improvement.

**Conclusion:** Although PCF is associated with chances of recurrence but when done properly it gives excellent results with less number of complications.

**Keywords:** Dupuytren's Contracture, Percutaneous Fasciotomy, Cords.

## INTRODUCTION

Dupuytren's disease is a proliferative fibroplasia of the palmar fascia of the hand and fingers, resulting in progressive thickening and shortening of the palmar fascia. This results in the formation of cords, flexion deformities of the digits, and ultimately loss of range of motion, especially loss of finger extension.<sup>1,2,8</sup> Approximately 5% of patients with dupuytren's contracture have involvement of feet either unilateral or bilateral, the fibroproliferative plantar fascia results in similar contracture as in hand, this condition is known as ledderhose disease and 3% patients have plastic induration of the penis known as peyronie's disease.<sup>3,4</sup> Patients having these associated lesions are said to have dupuytren's diathesis and are prone to progression and recurrent disease.<sup>3</sup> DC was initially considered to be autosomal dominant disorder. But now many genetic and environmental factors are involved

in the fibro-proliferation of the palmar fascia.<sup>6,8</sup> The lesions in dupuytren's contracture are more severe in patients of chronic liver disease, epilepsy and diabetes mellitus. Smoking and chronic alcoholism are also associated with increased severity and progression of the disease. It is also thought that hand injuries may start the development of lesion in genetically susceptible patients.<sup>2,3,6,8</sup> The lesion usually begins in line with ring finger at the distal palmar crease and progresses to involve the ring and little finger, these digits being more frequently than all others combined.<sup>5,6,7</sup> Flexion deformity of fingers with contractures involving MCP and PIP joints gradually develop, their severity depends on the extent and maturity of the fibroplasia.<sup>6,7,8</sup> In 1777 Henry Cline was first to introduce operative management of DC in the form of percutaneous fasciotomy. The pathological cords were released by him using bistoury knife after making stab incisions. However this technique had high recurrence rates which led to the introduction of radical fasciectomy, and later to more limited fasciectomy.<sup>5,6</sup> In 1952 Baxter et al, introduced injection of steroids into nodules.<sup>5</sup> Intra-lesional steroid injection failed to induce complete regression of the contractures despite decreasing the size of the nodules. At present there are no clear-cut guidelines for the operative management of DC. Most of the authors believe that surgery is needed when MCP joint contracture is more than 30 degrees and more than 10 degrees of PIP joint contracture is present because this results in significant functional impairment of the hand.<sup>5,7,8,9</sup> These are indications for surgical intervention. Different surgical options available are (1) Percutaneous Fasciotomy, (2) Partial Fasciectomy, (3) Complete Fasciectomy, (4) Fasciectomy with skin grafting, (5) Amputation.<sup>5,7,8,9</sup> We present a study of 10 patients of dupuytren's contracture managed with percutaneous fasciotomy and followed over a period of 6 months.

## MATERIAL AND METHODS

10 patients with dupuytren's contracture of more than 6 months duration with functional impairment were included in the study, After taking written consent patients were

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operated under local anaesthesia. Percutaneous Fasciotomy was performed using pointed scalpel. Three puncture wounds were made on the ulnar side of diseased palmar fascia at three levels, first one just distal to the apex of the palmar fascia between the thenar and hypothenar eminence, second one at level of proximal palmar crease and last one at the level of distal palmar crease. Through these puncture wounds a small tenotomy knife was inserted below skin but superficial to the palmar fascia. Fingers were extended to tighten the involved tissue. The fascial cords were divided by gently pressing the blade onto the tense cords with gentle pressure over the blade. When-ever a cord was divided the sense of gritty, firm resistance disappeared. Post-operatively a pressure dressing was applied for 24 hours, then a small dressing was applied. Immediate range of motion exercises of hand and fingers were started.

## RESULTS

8(80%) patients were males and 2(20%) patients were females both female patients were having diabetes. 7(70%) patients in our study were above 50 years of age and 3(30%) patients the age group was between 40-49 years. None was below 40 years of age. Dominant hand was involved in 8(80%) patients and in two patients problem was bilateral. Of 8 males patients two were carpenters, two hairdressers, one was plumber, one was shopkeeper who was on antiepileptic drugs, one patient was farmer, 1 patient was a government servant. The two female patients were housewives. In 6 patients contracture was present only in little and ring fingers, in 3 patients middle finger was also involved, and in one patient only little finger was involved. At 6 months follow-up only 1 patient had recurrence of contractures involving little and ring fingers, two patients had development of mild degrees of contracture but functionally there was significant improvement. In 7 patients results were excellent with complete regression of the lesions and complete functional improvement.

## DISCUSSION

There are different treatment options for the management of Dupuytren's contracture. In the absence of contractures treatment usually is not indicated because nodules and cords usually don't interfere with functions of hand. Very few people operate DC patients having nodules only without having finger contractures.<sup>14</sup> Ketchum and Donahue<sup>10</sup> studied the modification of Dupuytren's nodules by intra-lesional injection of triamcinolone acetonide, 97% of the hands showed decrease in the size of nodules after an average 3.2 injections per nodule.<sup>15</sup> However complete disappearance of nodules was not seen. 50% of the patients had recurrence of the disease within 3 years of the injection.<sup>16</sup> Cooper<sup>7</sup> (1822) was first to perform closed percutaneous fasciotomy in Dupuytren's contracture. Debeyre<sup>11</sup> repopularized the Cooper fasciotomy, but performed it under local anaesthesia. They called it percutaneous needle fasciotomy (PNF). The technique is now also called Needle Aponeurotomy (NA). In 1993, Badois et al<sup>12</sup> performed NA in 138 patients and

found that 81% had good or excellent primary results with a tubiana call I or II Dupuytren's contracture. In the group of patients with Tubiana class IV disease, 48% had good results. There were no major complications, although there was skin tear in 16%, digital dysesthesia in 2%, and infection in 2%. Bleton et al<sup>13</sup> documented the results of a prospective study of NA on 59 patients. 61% of patients had a good result, with an improvement of more than 50%. Foucher et al<sup>14</sup> reported an average 79% gain in extension for the MCP joints and 65% for the PIP joints in their cohort of patients. All complications were minor, including skin tears in 4%, Temporary paresthesias in 2% and superficial infection in 1%. Percutaneous Fasciotomy was performed in 107 hands in 1984 by Rowley.<sup>15</sup> Rowley<sup>15</sup> divided his patients into two groups. Group-I; patients had more contracture at MCP joint than at PIP joint, in Group-II; patients had predominant PIP joint contracture. At final follow-up he noticed that patients in group -I had better results with better improvement in finger contracture than Group -II patients. He believes that better results in Group-I patients was because the percutaneous fasciotomy was done proximal to distal palmar crease in order to avoid digital neurovascular injuries, only complication in his series was skin tears. He recommends PCF in those patients who have MCP joint contracture more than PIP joint contracture. At his final conclusion he still believes some improvement can also be obtained in patients of Dupuytren's contracture with predominant PIP joint contracture if done early before the development of capsular and collateral ligament contractures.<sup>17</sup> In 1997 Duthie<sup>16</sup> operated 160 patients of Dupuytren's contracture and performed percutaneous fasciotomy. He followed his patients over a period of 10 years. He is the first surgeon having such a long follow-up in Dupuytren's contracture. At final follow-up in his series only 34% had complete solution of the disease and 66% of the patients had recurrence of the contractures. The major complication in his series was skin tears.<sup>18</sup> The first long term study on Asian patients was done by Cheng<sup>17</sup> in 2008. Cheng<sup>17</sup> operated 8 Chinese patients and performed PCF. In his immediate post-operative follow-up he found 100% improvement in MCP joint flexion and 76% improvement in PIP joint flexion. But this percentage decreased to 70% improvement of MCP joint flexion and 41% improvement at PIP joint after 22 months of the surgery.<sup>19</sup>

## CONCLUSION

Although PCF is associated with chances of recurrence but when done properly it gives excellent results with less number of complications.

## REFERENCES

1. Albin R, Brickly D et al. Dupuytren's contracture: an active cellular process, *J Bone Joint Surgery* 1975;57A:726.
2. An HS, Southworth SR, Jackson T, et al; Cigarette smoking and Dupuytren's contracture of hand, *J Hand Surg* 1988;13A:872.
3. Shaw RB, Chong AKS, Zhang A, Hentz VR, Chang J.

- Dupuytren's disease: history, diagnosis, and treatment. *Plast Reconstr Surg* 2007;120:44–54.
4. Thorne CH, Beasley RW, Aston SJ, Bartlett SP, Gurtner GC, Spear SL. *Grabb and Smith's plastic surgery*. 6th ed. Philadelphia: Lippincott Williams and Wilkins; 2007. p. 864–5.
  5. Van Rijssen AL, Werker PMN. Percutaneous needle fasciotomy in Dupuytren's disease. *J Hand Surg*. 2006;31B:498–501.
  6. Weinzweig J. *Plastic surgery secrets*. Philadelphia: Elsevier; 1999, p. 554–9.
  7. Eaton-C. Percutaneous Fasciotomy for Dupuytren's contracture, *J Hand Surg*. 2011;36A: 910-5.
  8. Saoussen Salhi and Etienne Cardin-Langlois and Mario Luc. Percutaneous fasciotomy for the treatment of Dupuytren's disease—a systematic review. *HAND* 2011;6:349–355.
  9. Federico Amadei et al Needle Percutaneous Fasciotomy in Treatment of Several and Advanced Cases of Dupuytren's Disease. *Ortho and Rheum Open Access J* 2016;3:OROAJ.MS.ID.555601.
  10. Ketchum LD, Donahue TK: The injection of nodules of Dupuytren's contracture with triamcinolone acetonide. *J Hand Surg* 2000;25A:1157.
  11. Lermusianx. JL, Debeyre N. Le Traitement medical de la maladie Dupuytren's. *Rhumatologique*. Paris. Expansion Scientifique; 1979, P 338-43
  12. Badois FJ et al, Nonsurgical treatment of Dupuytren's disease using needle fasciotomy. *Rev Rhum Eng(Ed)* 1993;60: 692-7.
  13. Bleton R et al. Treatment of Dupuytren disease by percutaneous needle Fasciotomy. *Current Practice in hand surgery*, London: Martin Dunitz: 1997. P.187-93.
  14. Foucher G, Medina J, Malizos K. Percutaneous needle fasciotomy in Dupuytren disease. *Tech Hand Up Extrem Surg*. 2001;5:161–4.
  15. Rowley DI, Couch M, Chesney RB, Norris SH. Assessment of percutaneous fasciotomy in the management of Dupuytren's contracture. *J Hand Surg*. 1984;9B:163–4.
  16. Duthie RA, Cherney RB. Percutaneous Fasciotomy for Dupuytren's contracture—a 10 years review. *J Hand surg*. 1997;22 B:521-2.
  17. Cheng HS, Hung LK, Tse WL, Ho PC. Needle Aponeurotomy for Dupuytren's contracture. *J Orthop Surg*. 2008;16:88–90.

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