



PERCUTANEOUS NEEDLE APONEURECTOMY UNDER LOCAL ANESTHESIA IN DUPUYTREN'S CONTRACTURE.

Orthopaedics

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ABSTRACT

Introduction: Dupuytren is a word-wide musculoskeletal disorder consists in fibrosis of the palmar aponeurosis disabling flexion contracture of the metacarpophalangeal and proximal interphalangeal joints. Dupuytren's treatment include open surgery and percutaneous needle aponeurotomy. Percutaneous needle aponeurotomy is nonsurgical treatment and is minimally invasive procedure.

Aim and objectives: To determine the frequency of recurrence of flexion contracture in dupuytren after correction by percutaneous needle aponeurotomy.

Materials and methods: Methods. In this study 10 patients under the age group of 20-60 years with dupuytren's underwent needle aponeurotomy. Among 10 patients 6 were males and 4 females. This prospective study was done at the department of Orthopaedics, Govt. Medical College Srinagar from June 2019 to May 2020.

Results: The selected patients complaints difficulty in moving the fingers, occasional pain in the palm. Among selected 10 patients 5 (50%) of the patients had stage 1 of Dupuytren's contracture, 3 (30%) patients were of stage 2 contracture and 2 (20%) had stage 3 Dupuytren's contracture. 52 points were released in 18 fingers. The patients shows significant relief.

Conclusion: The frequency of recurrence of flexion contracture found significant after correction with percutaneous needle aponeurotomy. Percutaneous needle aponeurotomy is a minimally invasive treatment option for Dupuytren contracture

KEYWORDS

Dupuytren's Contracture, Needle Aponeurotomy, Recurrence

INTRODUCTION

Dupuytren is a word-wide musculoskeletal disorder consists in fibrosis of the palmar aponeurosis mostly disabling flexion contracture of the metacarpophalangeal and proximal interphalangeal joints. Dupuytren's contracture (DC) is a progressive condition in which connective cords form, thicken, and shorten, typically in the connective tissue of the palmar fascia, causing permanent flexion contractures of joints and of one or more fingers. Dupuytren's disease, described by Baron Guillaume Dupuytren, is a progressive fibroproliferative pathology of the palmar fascia leading to fixed flexion deformity and significant difficulties with activities of daily living.⁽¹⁾

For the treatment of dupuytren different approaches have been described as conservative treatment and surgical treatment. Conservative treatment includes physical therapy, steroid injection, 5 fluorouracil injection, and oral tamoxifen use^[2-6]. Surgical treatment methods include percutaneous needle aponeurotomy (PNA), open fasciotomy, partial fasciectomy (PF), radical fasciectomy, and dermofasciectomy^[7-11]. Surgical excision of the contracture cords risks wound breakdown, delayed wound healing, nerve damage, and recurrence^[12-15].

In 1979 inception by Lermusiaux and Debeyre, percutaneous needle aponeurotomy (PNA) has become a well-established approach to releasing contracture. Percutaneous aponeurotomy is more effective and has fewer complications; its latest modification is needle aponeurotomy, which entails dividing the cords percutaneously with a fine needle^[16,17]. Percutaneous needle aponeurotomy is nonsurgical treatment and is minimally invasive procedure. Amongst its advantages, it requires minimal staffing and resources. The purpose of this study was to determine the safety and efficacy of PNA when delivered as the treatment of choice for Dupuytren's disease.

MATERIALS AND METHODS

This prospective study was done at the department of Orthopaedics, Govt. Medical College Srinagar from June 2019 to May 2020. In this study 10 patients under the age group of 20-60 years with dupuytren's underwent needle aponeurotomy. All patients were given standardised counselling and advice regarding the benefits and risks of each therapy. As such, selection bias was minimised and only patients who self-opted to receive PNA ahead of other treatment modalities were included. The selected patient fulfills the inclusion criteria.

INCLUSION CRITERIA

Dupuytren's contracture stage I-III

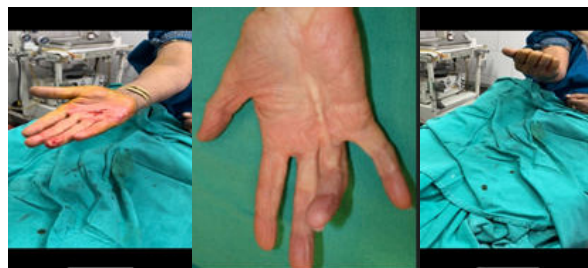
Belonging to either sex of age 20-60 years.

EXCLUSION CRITERIA

Recurrent disease,
Hand infection of affected hand
Hypersensitivity with lignocaine
Stage IV disease.

TECHNIQUE

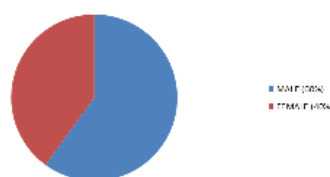
Needle aponeurotomy was carried out under local Anaesthesia. 23G hypodermic needle was used. The cord was palpated under tension and puncture-release sites were chosen. A small amount of lignocaine 1% without adrenaline was injected at each site. The needle was carefully inserted through the same injection puncture. With the cord put under tension, the needle was stroked a few times to a depth of a few millimetres. Care was taken to avoid injuring neurovascular bundles and lacerating the skin near the edge of the insertion. During needle puncture, the cord was put under tension by passive extension of the finger. Other punctures were applied in a similar manner along the cord. After release, the finger was kept in extension by splintage. The first dressing change was at postoperative days 3 to 7, when active mobilization was started. Splintage was continued for 8 to 12 weeks depending on individual needs.



RESULTS

The selected patients complaints difficulty in moving the fingers, occasional pain in the palm. There were 6 (60%) male patients and 4 (40%) females.

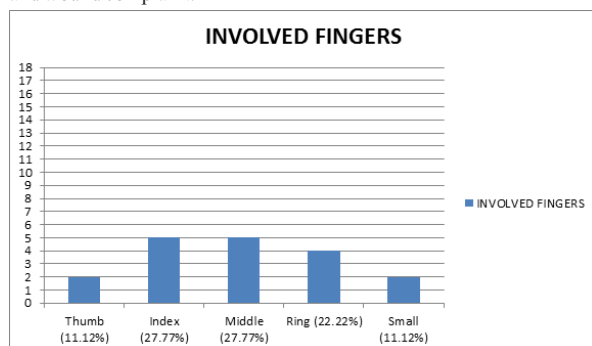
GENDER DISTRIBUTION



Among selected 10 patients 5(50%) of the patients had stage 1 of Dupuytren's contracture, 3(30%) patients were of stage 2 contracture and 2 (20%) had stage 3 Dupuytren's contracture.

Stages of disease	No. of patients	Percentage
1 st	5	50%
2 nd	3	30%
3 rd	2	20%
Total	10	100%

In selected 10 patients, 52 points were released in 18 fingers. Immediately after release, the respective mean flexion contracture correction of the metacarpophalangeal joints was 50 (from 55-5) degrees and proximal interphalangeal joints was 40 (from 56 to 16) degrees. At 12-months follow-up, the flexion contracture of metacarpophalangeal joints was 17 degree and proximal interphalangeal joints was 31 degree. The long term improvement in both type of joints was excellent. No patient had a neurovascular injury and wound complaint.



DISCUSSION

In recent years, the percutaneous technique has become our primary mode of surgical treatment of Dupuytren's contracture. The results of Dupuytren's contracture cases treated with percutaneous needle aponeurotomy technique are variable. There was no major complication in this study. Foucher et al.^[18] indicated that they achieved a recurrence rate of 58% after 3.2 years of follow-up in their PNA series. In 2012, Pess et al.^[19] stated a recurrence rate of 48% in 474 treated patients (1,013 fingers) and followed up by a mean follow-up duration of three years. Conventional surgeries for Dupuytren's contracture carry a higher risk of complications^[20] with recurrence rates of 34 to 66% after limited local excision^[21,22] or 11.6% after extensive excision of the entire palmar Aponeurosis^[23]. Needle aponeurotomy, first introduced by a French rheumatologist^[24,25] is less invasive and more acceptable to patients. According to our study, we were able to obtain excellent initial results (99 % corrected) with a low complication rate. The mean percent corrected at the metacarpophalangeal was 99% and proximal interphalangeal joint was 92 %, respectively. There was immediate correction of metacarpophalangeal joint contractures. Our results were fairly matched with a study in which immediately after release, the mean flexion contracture correction of the metacarpophalangeal joints was 50°. Needle Aponeurotomy can be used to treat post-operative re-occurrences of Dupuytren's contracture, with the exception of retractile scars and capsular retractions of the proximal interphalangeal joint^[26]. Percutaneous needle aponeurotomy therefore appears as a unique minimally invasive approach for Dupuytren's disease. It could become a valuable alternative to open surgery. The results obtained shows that the percutaneous needle aponeurotomy has suitable efficacy and safety profile in the treatment of Dupuytren's disease, because it is able to drastically reduce the need of open surgery in this condition.

CONCLUSION

The frequency of recurrence of flexion contracture found significant after correction with percutaneous needle aponeurotomy. Percutaneous needle aponeurotomy is a minimally invasive treatment option for Dupuytren contracture. Percutaneous needle aponeurotomy has suitable efficacy and safety profile in the treatment of Dupuytren's disease, because it is able to drastically reduce the need of open surgery in this condition.

REFERENCES

1. Turesson C, Kvist J, Krevens B. Experiences of men living with Dupuytren's disease- Consequences of the disease for hand function and daily activities. 2019 S0894-1130(18)30296-5.
2. Larocerie-Salgado J, Davidson J. Nonoperative treatment of PIPJ flexion contractures

associated with Dupuytren's disease. J Hand Surg Eur Vol 2012;37:722-7.

3. Betz N, Ott OJ, Adamietz B, Sauer R, Fietkau R, Keilholz L. Radiotherapy in early-stage Dupuytren's contracture. Longterm results after 13 years. Strahlenther Onkol 2010; 186: 82-90.
4. Ketchum LD. The Rationale for treating the nodule in Dupuytren's disease. Plast Reconstr Surg Glob Open 2015;2:278.
5. Jemec B, Linge C, Grobbelaar AO, Smith PJ, Sanders R, McGruther DA. The effect of 5-fluorouracil on Dupuytren fibroblast proliferation and differentiation. Chir Main 2000;19:15-22
6. Kuhn MA, Wang X, Payne WG, Ko F, Robson MC. Tamoxifen decreases fibroblast function and downregulates TGF(beta2) in Dupuytren's affected palmar fascia. J Surg Res 2002;103:146-52.
7. Pess GM, Pess RM, Pess RA. Results of needle aponeurotomy for Dupuytren contracture in over 1,000 fingers. J Hand Surg Am 2012;37:651-6.
8. Stewart CJ, Davidson DM, Hooper G. Re-operation after open fasciotomy for Dupuytren's disease in a series of 1,077 consecutive operations. J Hand Surg Eur Vol 2014;39:553-4.
9. Gelman S, Schlenker R, Bachoura A, Jacoby SM, Lipman J, Shin EK, et al. Minimally invasive partial fasciectomy for Dupuytren's contractures. Hand (N Y) 2012;7:364-9.
10. Lubahn JD, Lister GD, Wolfe T. Fasciectomy and Dupuytren's disease: a comparison between the open-palm technique and wound closure. J Hand Surg Am 1984;9:53-8.
11. Armstrong JR, Hurren JS, Logan AM. Dermofasciectomy in the management of Dupuytren's disease. J Bone Joint Surg Br 2000;82:90-4.
12. Boyer MI, Gelberman RH. Complications of the operative treatment of Dupuytren's disease. Hand Clin 1999;15:161-6.
13. Adam RF, Loynes RD. Prognosis in Dupuytren's disease. J Hand Surg Am 1992;17:312-7.
14. Tubiana R, Thomine JM, Brown S. Complications in surgery of Dupuytren's contracture. Plast Reconstr Surg 1967;39:603-12.
15. Armstrong JR, Hurren JS, Logan AM. Dermofasciectomy in the management of Dupuytren's disease. J Bone Joint Surg Br 2000;82:90-4.
16. Badois FJ, Lermusiaux JL, Masse C, Kuntz D. Non-surgical treatment of Dupuytren disease using needle fasciotomy. 1993;60:808-13.
17. Badois F. Non-surgical treatment of Dupuytren's contracture. Accessed 4 December 2006.
18. Foucher G, Medina J, Navarro R. Percutaneous needle aponeurotomy: complications and results. J Hand Surg Br 2003;28:427-31.
19. Pess GM, Pess RM, Pess RA. Results of needle aponeurotomy for Dupuytren contracture in over 1,000 fingers. J Hand Surg Am 2012;37:651-6.
20. Boyer MI, Gelberman RH. Complications of the operative treatment of Dupuytren's disease. Hand Clin 1999;15:161-6.
21. Adam RF, Loynes RD. Prognosis in Dupuytren's disease. J Hand Surg Am 1992; 17: 312-7.
22. Tubiana R, Thomine JM, Brown S. Complications in surgery of Dupuytren's contracture. Plast Reconstr Surg 1967;39:603-12.
23. Armstrong JR, Hurren JS, Logan AM. Dermofasciectomy in the management of Dupuytren's disease. J Bone Joint Surg Br 2000;82:90-4.
24. Badois FJ, Lermusiaux JL, Masse C, Kuntz D. Non-surgical treatment of Dupuytren disease using needle fasciotomy [in French]. Rev Rhum Ed Fr 1993;60:808-13.
25. Badois F. Non-surgical treatment of Dupuytren's contracture. Accessed 4 December 2006.
26. Messina A, Messina J. The continuous elongation treatment by the TEC device for severe Dupuytren's contracture of the fingers. Plast Reconstr Surg 92:84, 1993.