E-ISSN: 3068-3726
Journal of Orthopaedic Science and Research

ATHENAEUM SCIENTIFIC PUBLISHERS

Case Series

The Mubark Technique for Early Dupuytren's Disease: Ultrasound-Guided Needle Aponeurotomy and Platelet-Rich Plasma (PRP): A Case Series

Hassan Mubark[1*]

[1]Rheumatologist, Auckland Regenerative Clinic, Ormiston Specialist Centre, 125 Ormiston Road, Flat Bush, Auckland 2019, New Zealand

***Correspondence author:** Hassan Mubark, Rheumatologist, Auckland Regenerative Clinic, Ormiston Specialist Centre, 125 Ormiston Road, Flat Bush, Auckland 2019, New Zealand; Email: drhassanmubark@gmail.com

Citation: Mubark H. The Mubark Technique for Early Dupuytren's Disease: Ultrasound-Guided Needle Aponeurotomy and Platelet-Rich Plasma (PRP): A Case Series. J Ortho Sci Res. 2026;7(2):1-8.

https://doi.org/10.46889/JOSR.2026.7207

Received Date: 18-05-2026

Accepted Date: 08-06-2026

Published Date: 15-06-2026

Abstract

Background: Dupuytren's contracture is a chronic fibroproliferative disorder affecting the palmar fascia and may progressively lead to nodularity, fascial thickening, pain, and flexion deformity of the fingers. Although surgical fasciectomy, collagenase injection, and needle aponeurotomy remain established treatment options, recurrence remains a significant clinical challenge.

Objective: To describe a combined minimally invasive regenerative approach involving ultrasound-guided needle aponeurotomy integrated with Leukocyte-Poor Platelet-Rich Plasma (LP-PRP) infiltration ("The Mubark Technique"), and to describe the feasibility, safety, and clinical outcomes in three patients with Dupuytren's disease.

Methods: Three patients underwent office-based ultrasound-guided percutaneous needle aponeurotomy using a sweeping technique combined with infiltration of 2–4 mL of autologous LP-PRP concentrated to approximately 2-3 times baseline platelet levels into and around the pathological fascial tissues (cords).

Results: A 63-year-old female demonstrated sustained long-term improvement with no recurrence at nearly 3 years of follow-up. A 37-year-old female experienced rapid pain resolution together with approximately 65% reduction in the size and firmness of the fibrotic nodularity within one month. A 74-year-old male with bilateral Dupuytren's nodularity and early fibrotic palmar fascial thickening demonstrated no significant change at one week; however, mild softening of the cords and nodules was observed at three weeks, while finger extension remained unchanged. No complications and minimal downtime were observed following the procedures apart from transient mild discomfort and swelling lasting a few days post-procedure.

Conclusion: The Mubark Technique may represent a promising minimally invasive regenerative strategy combining mechanical fascial release with biologic modulation using PRP. The procedures were safe with no complications observed in this series. Further studies are warranted to evaluate long-term outcomes and recurrence prevention.

Keywords: Dupuytren's Disease; Dupuytren's Contracture; Platelet-Rich Plasma (PRP); Leukocyte-Poor Platelet-Rich Plasma (LP-PRP); Percutaneous Needle Aponeurotomy; Ultrasound-Guided Intervention; Regenerative Medicine; Fibrosis

Introduction

Dupuytren's contracture is a chronic fibroproliferative disorder of the palmar fascia characterized by progressive nodularity, fascial thickening, cord formation, and flexion deformity of the fingers [1]. The condition was formally described by Baron Guillaume Dupuytren in 1831 and remains one of the most common fibroproliferative disorders affecting the hand [2]. The disease predominantly affects the fourth and fifth digits and may progressively impair grip strength, hand function, and quality

of life [3,4].

Management strategies depend on disease severity and functional impairment. Current treatment options include collagenase injection, percutaneous needle aponeurotomy, limited fasciectomy, physiotherapy, splinting, and observation in selected early-stage cases [5-7]. Although these interventions may improve finger extension and function, recurrence remains a major limitation. Long-term studies have demonstrated that recurrent disease can occur despite apparently successful initial treatment, particularly in patients with more aggressive disease phenotypes [8].

Several clinical and biological factors have been associated with recurrence, including younger age at onset, bilateral disease, strong family history, and extensive fascial involvement, collectively referred to as Dupuytren's diathesis [9]. Increasing evidence suggests that Dupuytren's disease results from complex interactions between genetic susceptibility, aberrant wound-healing responses, myofibroblast activation, excessive collagen deposition, and dysregulated cytokine signaling pathways [10]. Transforming Growth Factor-Beta (TGF-β), Tumor Necrosis Factor-Alpha (TNF-α), and other profibrotic mediators appear to play central roles in maintaining fibroblast activation and extracellular matrix accumulation within the diseased fascia [10-12]. These processes contribute to progressive formation of pathological nodules and cords that ultimately lead to contracture and functional impairment [11,12].

Platelet-Rich Plasma (PRP) has emerged as a biologic therapy with regenerative and tissue-remodeling potential. PRP contains concentrated autologous growth factors and cytokines that may influence cellular proliferation, angiogenesis, extracellular matrix turnover, and tissue healing [13-15]. More recently, experimental studies investigating Dupuytren's disease have suggested that modulation of myofibroblast activity and fibrosis may represent a potential therapeutic target for future biologic interventions [16].

In our previously published report, direct PRP infiltration into Dupuytren's cords resulted in significant long-term clinical improvement without recurrence, suggesting that biologic modulation may complement mechanical treatment approaches [17]. Building on this observation, we developed a modified combined strategy termed the Mubark Technique, consisting of ultrasound-guided needle aponeurotomy with simultaneous infiltration of Leukocyte-Poor Platelet-Rich Plasma (LP-PRP) into the pathological cords and surrounding fibrotic tissues during the same procedural session. The technique was designed to combine immediate mechanical cord disruption with the potential longer-term biologic effects of LP-PRP-mediated tissue remodeling. This case series describes the rationale, technique, and clinical outcomes of three patients treated using this approach.

Case Reports

The Mubark Technique

All procedures were performed under sterile conditions using local anaesthesia and real-time ultrasound guidance. Ultrasound visualisation allowed accurate identification of the Dupuytren's cords, surrounding fascial thickening, adjacent flexor tendons, and nearby digital neurovascular structures. The use of ultrasound was intended to improve procedural accuracy, optimise needle placement, and enhance safety by allowing continuous visualisation of critical anatomical structures throughout the procedure.

A fine gauge 25G needle was initially introduced under local anaesthesia using ropivacaine 0.2%, selected because of its favourable tissue safety profile and lower potential toxicity to platelets. The needle was advanced through a horizontal distal-to-proximal approach with the fingers maintained in hyperextension to improve cord tension and procedural access. This approach was specifically chosen to optimise ultrasound visualisation of the needle, facilitate controlled longitudinal treatment of the pathological cords, and minimise the risk of injury to adjacent digital nerves, vessels, and flexor tendons.

The needle was subsequently exchanged for a 22–23G needle to perform controlled percutaneous needle aponeurotomy. Controlled perforations combined with sweeping mechanical releases were performed to weaken and partially divide the fibrotic fascial bands while carefully avoiding injury to surrounding structures. The rationale for needle aponeurotomy was to mechanically disrupt the pathological cords, reduce fascial tension, and improve tissue mobility while avoiding the morbidity associated with more invasive surgical procedures.

During mechanical aponeurotomy, autologous Leukocyte-Poor Platelet-Rich Plasma (LP-PRP), prepared from the patient's peripheral blood, was injected directly into the treated cords, nodules, and surrounding pathological fascial tissue during the same session. Between 2–4 mL of LP-PRP, concentrated to approximately 2–3 times baseline platelet levels, was administered depending on the severity of fibrosis and the length of the pathological cords. LP-PRP was selected because it may provide biological modulation of the fibroproliferative environment through the release of growth factors and cytokines involved in tissue healing and remodeling, while the reduced leukocyte concentration may minimise excessive inflammatory responses. The combined technique was designed to address both the mechanical component of Dupuytren's disease through cord disruption and the potential biological component through modulation of fibrosis and tissue remodeling within a single treatment session.

Case 1: A 63-year-old female with early Dupuytren's contracture of several years' duration, predominantly involving the left fourth and fifth digits, underwent ultrasound-guided needle aponeurotomy using a sweeping technique, combined with infiltration of the cords and surrounding tissues with approximately 4 mL of autologous LP-PRP (2 mL per finger) concentrated to approximately 2–3 times baseline platelet levels (Video 1, Fig. 1).

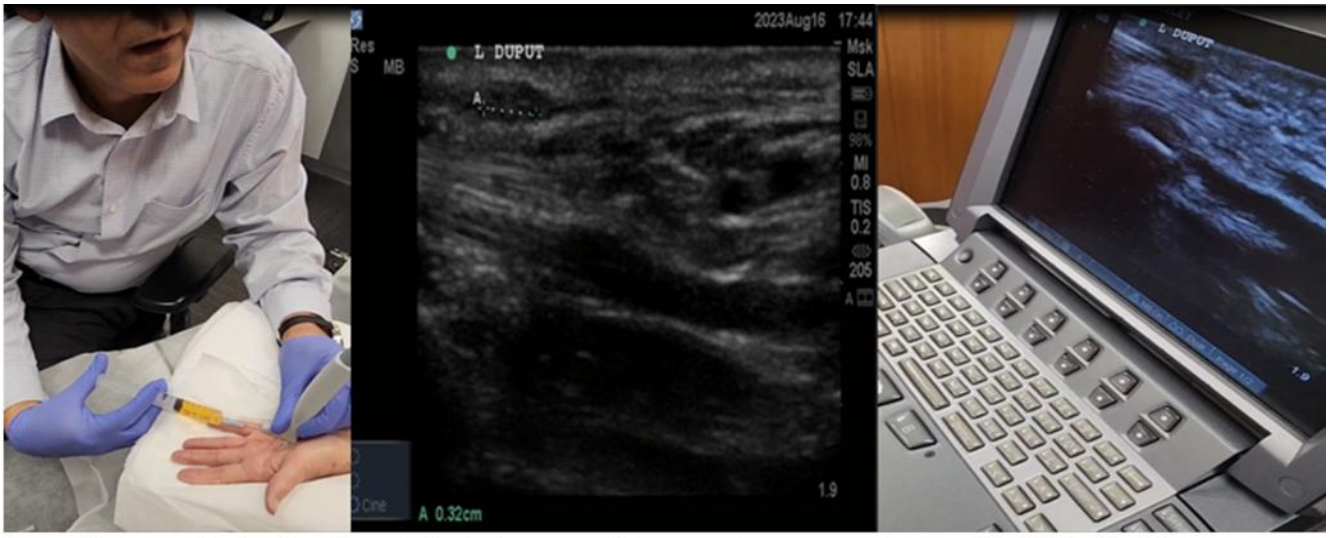

Figure 1 demonstrates the Mubark Technique combining needle aponeurotomy with PRP infiltration.

The patient demonstrated progressive clinical improvement with reduction in contracture severity, improved finger extension, and improved functional hand use. Long-term follow-up nearly 3 years post-treatment demonstrated sustained improvement without recurrence (Fig. 2).

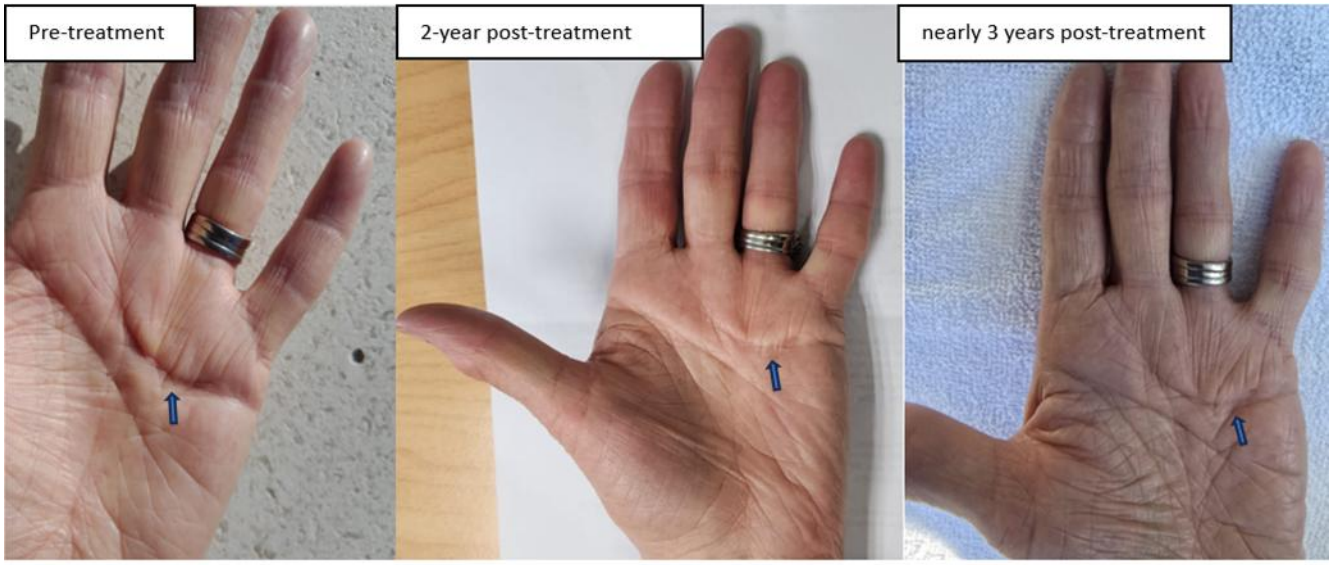

Figure 2 demonstrates no recurrence of Dupuytren's contracture nearly 3 years post The Mubark technique.

Case 2: A 37-year-old female presented with an 18-month history of early symptomatic Dupuytren's contracture affecting the left fourth finger, associated with painful palmar nodularity and early fibrotic cord formation causing functional hand impairment. The patient underwent ultrasound-guided needle aponeurotomy using a sweeping technique, combined with infiltration of the cord and surrounding tissues with approximately 4 mL of autologous LP-PRP concentrated to approximately 2–3 times baseline platelet levels (Video 2).

Rapid clinical improvement was observed with resolution of pain, softening of the nodularity, and reduction of the nodule size by 65% within one month following the procedure (Fig. 3).

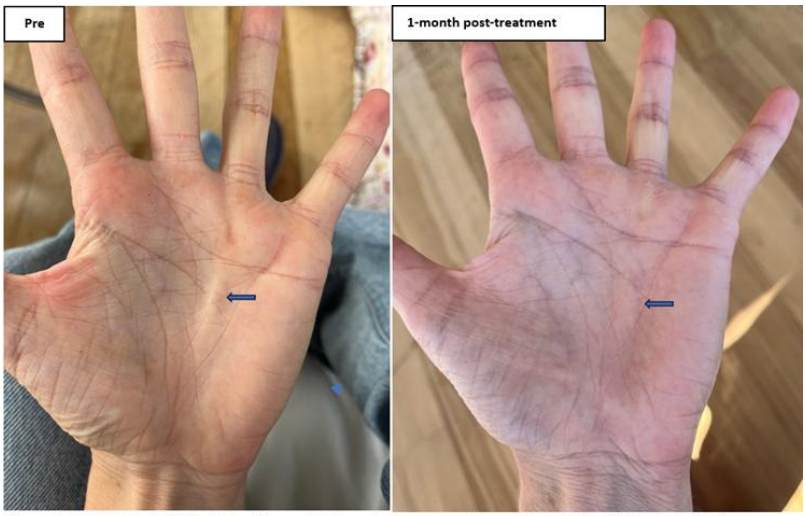

Figure 3 demonstrate 65% of the Dupuytren's nodule resolved 1 month post The Mubark technique.

Case 3: A 74-year-old male with diabetes mellitus presented with early bilateral Dupuytren's disease involving the third and fourth fingers of both hands, characterized by palmar nodularity, fibrotic fascial thickening, progressive palmar discomfort, and early functional limitation. The patient underwent ultrasound-guided needle aponeurotomy using a controlled sweeping technique, combined with infiltration of each pathological cord, associated nodules, and surrounding fibrotic tissue with approximately 2.5 mL of autologous Leukocyte-Poor Platelet-Rich Plasma (LP-PRP) concentrated to approximately 2–3 times baseline platelet levels.

At one-week follow-up, the procedure was well tolerated without complications, infection, neurovascular injury, tendon injury, or other adverse events. Mild transient post-procedural discomfort and swelling resolved spontaneously within a few days. No significant reduction in nodular size, cord thickness, or improvement in hand function was observed at this early stage. At three-week follow-up, mild softening of the palpable cords and nodules was noted bilaterally, although finger extension remained unchanged (Fig. 4). Given the short follow-up interval, no conclusions regarding long-term treatment efficacy can yet be drawn. The patient remains under ongoing follow-up to evaluate further structural, symptomatic, and functional changes.

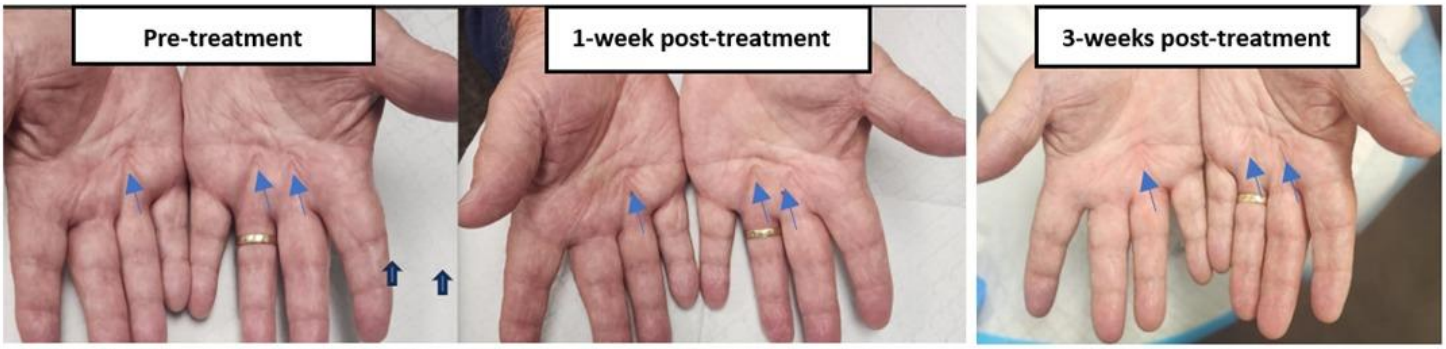

Figure 4. Bilateral Dupuytren's disease before treatment and at 1 and 3 weeks after the Mubark Technique. No change at 1 week. Mild cord and nodule softening at 3 weeks. Finger extension unchanged.

Results

All three patients tolerated the ultrasound-guided needle aponeurotomy and LP-PRP infiltration procedure well, with no reported infection, neurovascular injury, flexor tendon injury, or other significant complications. Case 1 demonstrated progressive clinical improvement with reduction in contracture severity, improved finger extension, and improved functional hand use. Long-term follow-up nearly 3 years after treatment showed sustained improvement with no clinical recurrence. Case 2 demonstrated rapid symptomatic and structural improvement, with resolution of pain, softening of the fibrotic palmar nodularity, and approximately 65% reduction in nodule size and firmness within one month following treatment. Case 3 showed no significant change in nodular size, consistency, or hand function at one-week follow-up. At three weeks, mild softening of the cords and nodules was observed, although finger extension remained unchanged. The procedure was well tolerated without complications, and these early findings suggest that biologic tissue remodeling may continue beyond the first week following treatment.

Discussion

Platelet-rich plasma contains a concentrated source of autologous growth factors and cytokines that may influence inflammation, angiogenesis, extracellular matrix remodeling, fibroblast behaviour, and tissue healing [13-15]. Experimental evidence has further suggested that modulation of myofibroblast activity may represent a future therapeutic strategy for Dupuytren's disease and other fibroproliferative disorders [16].

Our previously published case report demonstrated significant long-term resolution of Dupuytren's disease following ultrasound-guided PRP infiltration using a mechanical sweeping technique that simultaneously achieved partial cord disruption and biologic delivery [17]. The present series expands upon that concept by incorporating formal ultrasound-guided needle aponeurotomy combined with simultaneous LP-PRP infiltration during the same treatment session.

The rationale for this combined approach is based on addressing both the structural and biologic components of Dupuytren's disease. Mechanically, needle aponeurotomy weakens and partially divides the pathological cords, improving tissue extensibility and reducing fascial tension. Biologically, LP-PRP may influence fibroblast signaling, extracellular matrix remodeling, angiogenesis, and collagen recognization, potentially reducing ongoing fibroproliferative activity [13-15].

Several studies support the use of minimally invasive treatment strategies for Dupuytren's disease. Percutaneous needle aponeurotomy has been shown to provide effective correction of contracture with low complication rates and rapid functional recovery [18]. Van Rijssen and colleagues demonstrated that needle fasciotomy offers earlier recovery and fewer postoperative complications than limited fasciectomy, although recurrence remains a recognised limitation [19]. Foucher and Cornil similarly reported favourable outcomes and a strong safety profile when needle fasciotomy is performed by experienced operators [20]. Furthermore, ultrasound-guided hand interventions may improve procedural accuracy by allowing direct visualisation of pathological tissue and adjacent neurovascular structures throughout treatment [21].

The Mubark Technique was specifically designed to enhance procedural precision and safety. We believe that a distal-to-proximal horizontal approach performed under continuous ultrasound guidance may reduce the risk of digital nerve and flexor tendon injury compared with blind or vertically directed needle techniques. Maintaining the finger in hyperextension improves cord tension and facilitates controlled weakening of the diseased fascia. Simultaneous LP-PRP infiltration throughout the treated tissue may also provide a more uniform biologic remodeling environment. An additional advantage of this technique is that it is an office-based procedure performed under local anaesthesia. Recovery is typically rapid with minimal downtime, allowing early return to daily activities. Compared with surgery, the procedure may potentially reduce risks associated with wound complications, infection, prolonged rehabilitation, tendon injury, neurovascular injury, postoperative stiffness, and hospital admission.

The biologic rationale for combining LP-PRP with mechanical cord disruption is supported by increasing evidence demonstrating that platelet-derived growth factors regulate tissue healing, extracellular matrix turnover, angiogenesis, and inflammatory pathways [22-24]. Experimental studies have also demonstrated that growth factor-rich platelet preparations may influence fibroblast activity and collagen remodeling, providing a plausible biologic mechanism for reducing fibrosis and improving tissue quality following mechanical release [25].

The clinical outcomes observed in this series appear consistent with these proposed mechanisms. Case 1 demonstrated durable improvement without recurrence at nearly three years. Case 2 showed rapid reduction in pain and nodular size within one month. Case 3 demonstrated no significant change at one week, but mild cord and nodule softening became evident by three weeks while finger extension remained unchanged. Although these findings remain preliminary, they may suggest the onset of early biologic tissue remodeling following LP-PRP infiltration, warranting longer-term follow-up before any conclusions regarding efficacy can be drawn.

The present report has several limitations, including the small number of patients, absence of a control group, and limited long-term follow-up in some cases. Nevertheless, the findings suggest that combining ultrasound-guided needle aponeurotomy with LP-PRP is feasible, safe, and biologically plausible. Larger prospective studies are required to determine efficacy, reproducibility, optimal PRP preparation, long-term recurrence rates, and comparative outcomes against surgery, collagenase injection, and conventional needle aponeurotomy.

Conclusion and Future Implications

The Mubark Technique, which combines ultrasound-guided needle aponeurotomy with Leukocyte-Poor Platelet-Rich Plasma (LP-PRP) infiltration during a single treatment session, may represent a promising minimally invasive regenerative treatment option for selected patients with early Dupuytren's disease. By combining controlled mechanical disruption of pathological cords with biologic modulation, the technique may address both the structural contractile components and the underlying fibroproliferative processes of the disease while potentially reducing the risk of recurrence. The proposed treatment flow chart (Fig. 5) provides a practical framework for patient selection, procedural implementation, and follow-up assessment. Future prospective studies involving larger patient cohorts, standardized outcome measures, longer follow-up durations, and comparative analyses against surgery, collagenase injection, and conventional needle aponeurotomy are required to further evaluate efficacy, safety, cost-effectiveness, and long-term recurrence prevention.

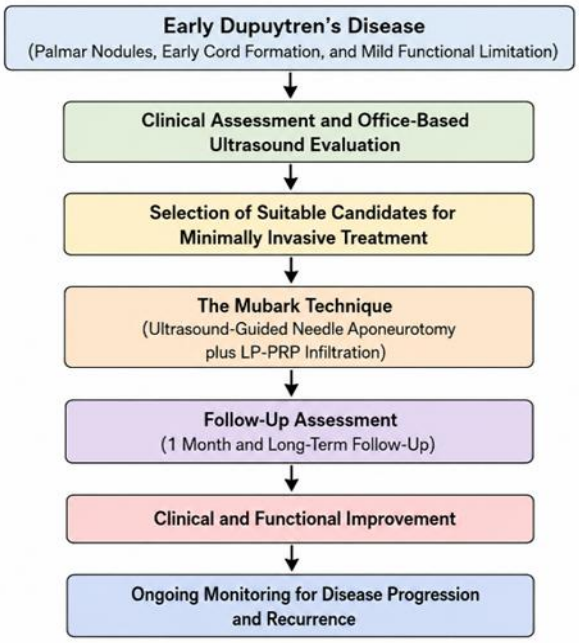

Figure 5. Proposed Flow Chart for the Mubark Technique in Early Dupuytren's Disease

Conflict of Interest

The author developed the Mubark Technique described in this article. No financial support, industry sponsorships or commercial interests are associated with this work.

Funding Statement

This research did not receive any specific grant from funding agencies in the public, commercial or non-profit sectors.

Acknowledgement
The author sincerely thanks the patients who consented to the publication of their clinical information and imaging findings. Special thanks to the author's wife, Mrs. Zahraa Jasim, for her ongoing encouragement and assistance with the preparation of patient clinical notes.

Data Availability Statement
The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Ethical Statement
The project did not meet the definition of human subject research under the purview of the IRB according to federal regulations and therefore was exempt.

Informed Consent Statement
Informed consent was obtained from all participants included in the study.

Authors' Contributions
The author conceived the study, performed the procedures, collected, and analyzed the data, and prepared the manuscript.

References
1. Rayan GM. Dupuytren disease: Anatomy, pathology, presentation and treatment. J Bone Joint Surg Am. 2007;89(1):189-98.
2. Elliot D. The early history of Dupuytren's disease. Hand Clin. 1999;15(1):1-9.
3. Townley WA, Baker R, Sheppard N, Grobbelaar AO. Dupuytren's contracture unfolded. BMJ. 2006;332(7538):397-400.
4. Bayat A, McGrouther DA. Management of Dupuytren's disease: Clear advice for an elusive condition. Ann R Coll Surg Engl. 2006;88(1):3-8.
5. Hurst LC, Badalamente MA, Hentz VR, Hotchkiss RN, Kaplan FT, Meals RA, et al. Injectable collagenase clostridium histolyticum for Dupuytren's contracture. N Engl J Med. 2009;361(10):968-79.
6. Foucher G, Medina J, Navarro R. Percutaneous needle aponeurotomy: Complications and results. J Hand Surg Br. 2003;28(5):427-31.
7. Van Rijssen AL, Werker PM. Percutaneous needle fasciotomy in Dupuytren's disease. J Hand Surg Br. 2006;31(5):498-501.
8. Peimer CA, Blazar P, Coleman S, Kaplan FT, Smith T, Lindau T. Dupuytren contracture recurrence following treatment with collagenase clostridium histolyticum (CORDLESS): 5-year data. J Hand Surg Am. 2015;40(8):1597-605.
9. Hindocha S, Stanley JK, Watson S, Bayat A. Dupuytren's diathesis revisited: Evaluation of prognostic indicators for risk of disease recurrence. J Hand Surg Am. 2006;31(10):1626-34.
10. Verjee LS, Verhoekx JS, Chan JK, Krausgruber T, Nicolaidou V, et al. Unraveling the signaling pathways promoting fibrosis in Dupuytren's disease reveals TNF as a therapeutic target. Proc Natl Acad Sci U S A. 2013;110(10):E928-37.
11. Wynn TA. Cellular and molecular mechanisms of fibrosis. J Pathol. 2008;214(2):199-210.
12. Satish L, Gallo PH, Baratz ME, Johnson S, Kathju S. Reversal of TGF-β1 stimulation of α-smooth muscle actin and extracellular matrix components by cyclic AMP in Dupuytren's-derived fibroblasts. BMC Musculoskelet Disord. 2011;12:113.
13. Marx RE. Platelet-rich plasma: evidence to support its use. J Oral Maxillofac Surg. 2004;62(4):489-96.
14. Foster TE, Puskas BL, Mandelbaum BR, Gerhardt MB, Rodeo SA. Platelet-rich plasma: From basic science to clinical applications. Am J Sports Med. 2009;37(11):2259-72.
15. Everts PA, Knape JT, Weibrich G, Schönberger JP, Hoffmann J, Overdevest EP, et al. Platelet-rich plasma and platelet gel: A review. J Extra Corpor Technol. 2006;38(2):174-87.
16. Ziegler ME, Lem M, Melkonian J, Nasrollahi T. Transforming myofibroblasts into lipid-filled cells to treat Dupuytren disease. J Hand Surg Am. 2025.
17. Mubark H. World's first human case of significant Dupuytren's contracture resolution two years post single platelet-rich plasma injection. J Orthop Sci Res. 2025;6(2):1-4.
18. Lermusiaux JL, Debeyre N, Foucher G. Percutaneous needle fasciotomy in Dupuytren disease. J Hand Surg Br. 2001;26(6):523-6.
19. van Rijssen AL, Gerbrandy FS, Ter Linden H, Klip H, Werker PM. A comparison of percutaneous needle fasciotomy and

limited fasciectomy for Dupuytren's contracture. J Hand Surg Am. 2006;31(5):717-25.
20. Foucher G, Cornil C. Percutaneous needle fasciotomy in Dupuytren disease. Tech Hand Up Extrem Surg. 2008;12(4):196-200.
21. Colio SW, Smith J, Pourcho AM. Ultrasound-guided interventional procedures of the wrist and hand: Anatomy, indications and techniques. Phys Med Rehabil Clin N Am. 2016;27(3):589-605.
22. Andia I, Abate M. Platelet-rich plasma: Underlying biology and clinical correlates. Regen Med. 2013;8(5):645-58.
23. Andia I, Maffulli N. Platelet-rich plasma for managing pain and inflammation in osteoarthritis. Nat Rev Rheumatol. 2013;9(12):721-30.
24. Kobayashi E, Flückiger L, Fujioka-Kobayashi M, Sawada K, Sculean A, Schaller B, et al. Comparative release of growth factors from PRP, PRF and advanced-PRF. Clin Oral Investig. 2016;20(9):2353-60.
25. Anitua E, Sánchez M, Zalduendo MM, de la Fuente M, Prado R, Orive G, et al. Fibroblastic response to treatment with different preparations rich in growth factors. Cell Prolif. 2009;42(2):162-70.