

Evaluation of Combined Dermofasciectomy and Capsuloligamentous Release of Metacarpo-Phalangeal Joints in Management of Severe Dupuytren's Contracture

YOUSSEF SALEH, M.D.*; EL-SHAZLY SALEH, M.D.** and ESSAM ABDA, M.D.***

The Departments of Plastic & Reconstructive Surgery, Assiut University; Orthopedic Surgery**, South Valley University and Physiotherapy & Rheumatology***, Assiut University.*

ABSTRACT

In this Study, 25 patients with dupuytren's contracture of variable degrees of M.P. joint flexion contracture (45-90 degrees) were operated upon. They were subjected to a standard technique in the form of dermal fasciectomy and capsuloligamentous release of M.P. joints, followed by intensive physiotherapy program.

Results, complications and follow-up are discussed.

INTRODUCTION

Dupuytren's contracture is a disease of the palmar fascia resulting in thickening and contracture of fibrous bands on the palmar surface of the hand and fingers [1].

However, some authors believed that dupuytren's disease is a proliferative disorder of autosomal dominant inheritance that most commonly affects men over 60 years old who are of Scandinavian, Irish, or Eastern European. Also, they claimed that there is local microvessel ischemia in the hand, specific platelet derived and fibroblast growth factors act at the cellular level to promote the dense myofibroblast population and altered collagen profiles seen in affected tissue [2].

Some authors concluded that this disease was usually associated with other diseases such as diabetes mellitus, epilepsy and alcoholism but the causal relationship in each instance is unclear [3].

Despite decades of both scientific and clinical investigations the precise, etiology and tissue origin of dupuytren's disease remains unclear, it is now generally accepted that a single

causative factor is unlikely, so that origin and progression of the disease are complex [4].

At present, the treatment for dupuytren's disease is surgical, however all of the surgical procedures as fasciotomy (Brayon and Ghorbal, 1988), fasciectomy (Chick and Lister, 1991), or dermofasciectomy (Hall et al., 1997) cannot provide a cure, alter the underlying pathology or prevent the recurrence [5].

PATIENTS AND METHODS

This study was carried upon 25 patients, admitted in both Plastic Surgery Department in Assiut University Hospital and Orthopedic Department in South Valley University in the period from April 2000 to April 2002.

Their ages ranged from 40 ys to 65 ys with a mean age of 51.8 ys, fifteen of them were female and ten were males.

They were complaining of dupuytren's contracture in form of fibrous band in the palmar aspect of the hand and various degree of M.P. joint flexion.

The right hand was affected in 15 cases, the left one was affected in 8 cases and both hands were affected in 2 cases.

The ring finger was mostly affected in 11 cases, followed by little finger in 8 cases, followed by index finger in 4 cases and 2 cases were presented by affection in both ring and index fingers. The degree of M.P. joint flexion contracture varied from 45 to 90 degrees in the affected finger.

Each patient was subjected to the following:

- 1- Full medical history and complete systematic examination.
- 2- Complete examination of the hand includes:
 - a- Muscles of the hand: (thenar and hypoth- enar groups).
 - b- Tendons: (flexor digitorum superficialis, flexor digitorum profundus, flexor pollicis longus and brevis and extensor tendons).
 - c- Sensation both motor and sensory nerves (Median, ulnar and radial).
 - d- Vascularity: Allen's test was done to assess the patency of both ulnar and radial arteries.
 - e- Skin: was examined for the presence of fibrous band in the palm or pathognomonic nodule in palm or base of the finger.

After complete evaluation and routine fitness investigations for all patients, both dermal fasciectomy and capsuloligamentous release of M.P. joint were done.

Surgical technique: All cases were done under regional anesthesia either wrist block or local intravenous using 2% xylocaine, in all cases tourniquet was applied.

Type of incision: A combined zigzag longitudinal incision extending from distal palmar crease to the P.I.P. joint over the affected finger and a transverse palmar incision. The depth of skin incision is important, in the proximal palm the incision was extended through skin and variable thickness of fibro-fatty superficial fascia up to the diseased palmar aponeurosis is encountered in this area can be reflected safely, however in the distal palm or proximal segment of the finger, the diseased fascia is intimately adherent to the skin so the dissection should be carried out under loupe magnification using scalpel blade.

After good skin reflection, excision of affected palmar fascia and fibrous band around the affected finger was done, followed by anterior capsulotomy and collateral ligament release for M.P. joint to ensure complete freeing of all fibrous tissue.

Wound closure was carried out after release of tourniquet and meticulous hemostasis using 3/0 proline and suction drain.

Postoperatively: The patient received a broad spectrum antibiotic, elevation of the hand and meticulous monitoring for finger vascularity. The stitches was removed in outpatient clinic at the 8th day postoperatively.

Physiotherapy program: Immediately after removal of stitches the patient underwent an intensive course of physiotherapy in form of the following:

- 1- Deep heat therapy (U/S) in 1-1.5 watt/cm³ for 5-8 minutes daily.
- 2- Active range of motion exercise.
- 3- Stretching exercise for the joint.
- 4- Hydrotherapy in water for easy finger exercise.

The patient underwent this program for at least 2 months till regaining an acceptable range of motion.

Follow up period: Ranged from 6 to 20 months.

RESULTS

Every patient was evaluated for the following:

- 1- Early complications as:
 - a- Loss of flexion.
 - b- Arterial or nerve injury.
 - c- Development of haematoma or seroma.
- 2- Late complications as:
 - a- Limited range of motion for flexion or extension.
 - b- Development of hypertrophic scar or keloid.
 - c- Recurrence.

As regards loss of flexion or arterial or nerve injury, there was no case developed this complication in our thesis. As regards haematoma or seroma, there were two cases developed haematoma immediate postoperatively but responding rapidly to repeated aspiration, good anti-inflammatory and good antibiotic.

As regards the range of motion, 20 cases developed full range of motion for both flexion and extension after this technique and intensive physiotherapy.

Three cases developed an acceptable range of motion and also restoration of M.P. joint

movement for flexion about 80 degree however full range of extension.

Two cases only failed to restore the range of motion, the first one developed haematoma immediate postoperatively which enhancing development of fibrosis and the second one was diabetic with very poor healing power.

There was only one case developed hypertrophic scar during the follow up period.

As regards recurrence, there is only one case developed recurrence during the period of the study which is mostly did not receive it's complete physiotherapy program.



Fig. (1): a- Pre-operative showing contracture of little and ring fingers.



Fig. (1): b- Post-operative showing full extension.



Fig. (1): c- Post-operative showing full flexion.



Fig. (2):a- Pre-operative showing contracture of the ring finger.



Fig. (2): b- Post-operative showing full extension.



Fig. (2): c- Post-operative showing full flexion.



Fig. (3): a- Pre-operative showing bilateral Dupuytren's contracture.



Fig. (3): b- Post-operative showing full extension of both hands.



Fig. (3): c- Post-operative showing full flexion of both hands.

Fig. (4): a- Pre-operative showing contracture affecting the middle and little fingers.



Fig. (4): b- Post-operative showing full extension of the hand.



Fig. (4): c- Post-operative showing flexion holding a rubber tube.



Fig. (4): d- Post-operative showing flexion holding a fine object (Pen).



DISCUSSION

Dupuytren's disease is a proliferative fibroplasia that can lead to a significant contracture of the metacarpophalangeal and interphalangeal joints, causing a functional disability of the hand [6].

Severe contracture in dupuytren's disease presents a frustrating problem for hand surgeon [7].

Several surgical procedures were described for treatment of dupuytren's disease as fasciotomy, localized fasciectomy or dermofasciectomy but they failed to give a full correction of the deformity or preventing the recurrence [8].

Some surgeons argue for fasciotomy or fasciectomy or dermatofasciectomy alone avoiding violation of the metacarpophalangeal joint which may prolong the morbidity and results in permanent limitation of flexion [7].

Some authors stated that the use of capsulotomy in addition to fasciectomy especially in severe contracture may give complete correction of deformity which cannot be attempted by fasciectomy alone [7].

In this study we operated upon 25 patients presented by dupuytren's contracture of variable degrees of M.P. joint flexion contracture (45-90 degrees). For all patients we did a standard technique in the form of dermal fasciectomy and capsuloligamentous release of M.P. joint, followed by intensive physiotherapy program.

There were no cases developed loss of flexion or nerve or arterial injury during the period of study this may be due to meticulous dissection and using magnification loupe during the dissection.

There were 2 cases developed limited range of motion out of 25 cases (5%), this could be explained by the following, the first one developed haematoma in immediate postoperative and ended by fibrosis, the second case was diabetic with very bad healing power hence developed wound infection. Also, there were 3 cases (7.5%) developed limited flexion (80 degrees) and complete extension range. So, the overall incidence of limited motion following this procedure about 5 cases out of 25 cases (12.5%), this was matched with the results of Weinzwieg et al. [7], who worked upon 28 patients doing

both fasciectomy and capsuloligamentous release, the outcome of limited range of motion in his thesis was 11.5%, also our results were less than Prosser & Conolly [6], who worked upon 20 cases with limited motion range about 17%. This may be attributed to intensive physiotherapy program in our thesis and early mobilization immediately after stitch removal.

There were only one case developed recurrence during the period of study (2.5%), which may be explained by that this patient cannot complete his intensive physiotherapy program. This is not matched with result of Fitzgerald et al. [5], who worked upon 24 cases doing only dermofasciectomy with recurrence rate 8%, so this may add advantage to our technique which includes capsuloligamentous release of M.P. in addition to fasciectomy and intensive physiotherapy in decreasing the incidence of recurrence.

There were only 2 cases during the period of the study developed hematoma this may be attributed to the use of suction drain as a routine in our cases.

There is only one case developed post-operative hypertrophic scar due to the use of zigzag incision which decreasing the incidence of hypertrophic scar formation.

From this study we conclude that:

- 1- Surgery for correction of dupuytren's contracture was very frustrating for hand surgeon.
- 2- The combined use of both dermofasciectomy and capsuloligamentous release of M.P. joint improving the range of motion and decreasing the recurrence rate than fasciectomy alone.
- 3- The early mobilization and intensive physiotherapy play an important role in restoration full range of motion and decreasing the recurrence rate.
- 4- The use of loupe magnification during dissection is mandatory in order to avoid arterial or nerve injury.

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