

What is Dupuytren's contracture?

This disease affects the palmar side of the hand. Dupuytren's contracture is the thickening of the middle part of a membrane (palmar aponeurosis) which lies beneath the skin (Fig.1). This thickening leads to the formation of strings and cords which gradually shrink to cause irreducible bending of fingers. Nodules, dimples, folds, and puckering of the skin can also occur. Eventually this disease produces a fixed flexed position of the finger. Deformation leads progressively to inability to extend the affected finger from the flexed position (Fig.2, 3). Patients find it difficult to shake hands, spread their fingers, put their hand in a pocket or put on a glove. They may be unable to grasp the handle of a tool, a tennis racket, or a golf club, type on a computer keyboard, or use a computer mouse. Playing a sport or a musical instrument can also be troublesome.

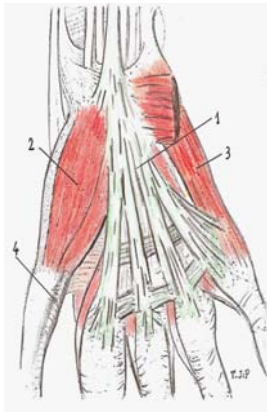


Fig. 1
 Palmar aponeurosi (1.)



Fig. 2
 Palmo-digital cord.



Fig. 3
 Cord as seen through the skin.



Fig.4
 Nodule..



Fig.5
 Palmo-digital cords (5, 6).

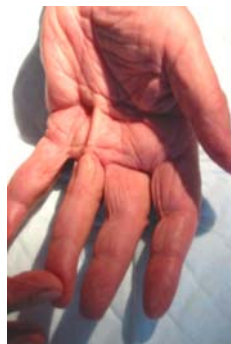


Fig.6

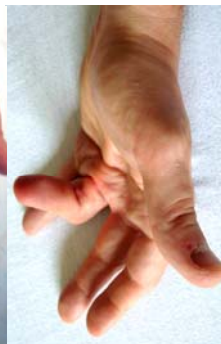


Fig.7



Fig.8

Cords bending the ring finger (7) and the little finger (8).

How is Dupuytren's Contracture diagnosed?

Diagnosis is rather easy. Deformations are easily recognisable and can't be confused with those produced by other diseases. However the practitioner who examines the patient must be specialized in hand pathology (Fig. 4, 5, 6, 7, 8).

When to treat the Dupuytren's contracture?

Indication for N.A. is easily determined by the "table test". The patient is asked to press his or her hand on to a table top, palm-down. If the patient is no longer able to fully extend his or her hand on the table, the table test is positive and treatment is advisable.

Non surgical treatment of Dupuytren's contracture (Needle Aponeurotomy)

N.A. was invented in 1972 by the French rheumatologist, Jean-Luc Lermusiaux. This technique was developed due to the technological progress in single-use medical needles, with their double sharp bevels being used as microscalpels. It is a minimal invasive technique which can be performed in an ordinary doctor's office.

The technique consists of one or several percutaneous sections of aponeurotic cords with the bevel of a needle (16-5/10th in Europe, 25G x 5/8 in the US) (Fig. 9). The same needle is used to inject a local anaesthetic: 1-3cc of lidocain 2% is used inside and around the cord after a thorough disinfection of the skin with 1% iodised alcohol. A small amount of prednisolone acetate 2.5% can be added to the solution in the syringe (1ml per 5ml of lidocain) to prevent any painful reaction after the treatment.

Unlike other non-surgical techniques still in development, no enzyme is injected into the cord. Division of the cord is obtained by to-and-fro movements of the needle, perpendicular to the palm, followed by a firm and well controlled extension of the treated finger (Fig. 10, 11). A dry bandage protected by an elastic tape (Tensoplast®) should be kept in place for three days. One to four aponeurotomies can be performed in a single session and the procedure repeated after seven days. One or two sessions are needed to treat Tubiana stage 1 and 2 diseases. Treatment is always initiated from palmar to distal cords and from P1 to P2 in the finger. A thermoplastic splint worn at night is sometimes necessary in long-standing proximal interphalangeal forms with capsular retraction. Apart from unhygienic tasks, full use of the hand is possible immediately. A two week sick-leave is only necessary when treating manual workers.

Needle Multiaponeurotomy

Multiaponeurotomy involves the treatment of the entire hand in one session of five to 15 needle aponeurotomies. Recently, Beaudreuil and Coll reported their results of an 18 month follow-up of 42 patients with severe and complex forms (55 hands, 157 digits), who received an average of 8 ± 3 aponeurotomies in one session. Results in terms of the degree of contracture reduction, disability measured by analogical visual scale and patient satisfaction were similar to those seen in classic aponeurotomy, with a 2% rate of minor adverse effects. Progress was maintained after 18 months, with a satisfaction score of 80%. Social and economic costs are still attractively low : no surgery room, no sick-leave (with the exception of unhygienic work) and no post-operative care.

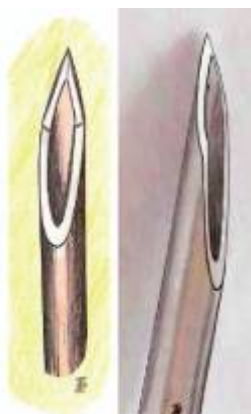


Fig. 9
Needles, with their double sharp bevels.



Fig. 10
Section of the cord obtained by to-and-fro movements of the needle.

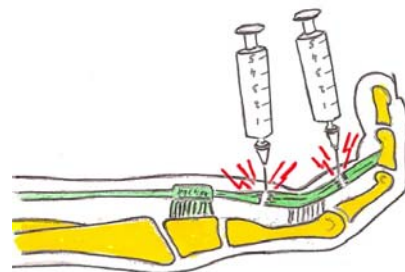


Fig. 11
Cord section on two points.

What are the results and advantages of the needle aponeurotomy ?

Immediate and five-year follow-up results are similar to surgical results (Fig.13, 14). The immediate results are excellent with Tubiana stage 1 and 2 (89–92% reduction of the degree of contracture), good with stage 3 (83%) and intermediate with stage 4 (48%) disease. There is no aggravation or failure, unlike in surgical cases. After five years, results are sustained in stage 1, 2 and 3 (92, 74 and 57%, respectively), but only 38% in stage 4. The recurrence rate is up to 50% in all series. However the safety and non surgical aspect as well as the low cost of the technique make re-treatment very easy in case of recurrence. Stage 4 treatment still shows insufficient results, which suggests that treatment in the earlier stages is advisable. NA should be offered as first-line treatment in stages 1, 2 and 3. Technical improvements have resulted in treatment of digital forms. NA can be used to treat post-operative reoccurrences of Dupuytren's contracture, with the exception of retractile scars and capsular retractions of the PIP joint.

What are the complications of Needle Aponeurotomy ?

Serious adverse effects are uncommon after NA. However, in fewer than 1,000 cases, rupture of one of the flexor tendons may occur within a few days of the procedure, which requires prompt surgical repair. Section of the collateral nerve occurs in fewer than 1 in 1,000 cases. No complex regional pain syndrome of the entire hand has occurred in our centre, and only three focal forms have been reported over 35 years of experience. Phlegmon only very rarely occurs.

Minor incidents occur in 1% of procedures, including skin breaks, temporary hypoesthesia, superficial infections and haematoma. These incidents are minimal when compared to the high rate of complications following surgical management of Dupuytren's contracture :19–21 section of nerve 5.2%, section of tendon 2%,section of artery 1.8%, complex regional pain syndrome (CRPS) 1.8%,infections 1–2%, amputations 0.1% and scarring 100%.

It is important to emphasize that N.A. is a delicate medical technique which should only be performed by well trained practitioners using the appropriate tools. Use of a blade or troncular anaesthesia increases the risk of tendon damage, skin scarring and nerve lesion.



Fig. 13 Before treatment.



Fig.14 after treatment.

Drs. Marie-Pascale Manet, Jean-Pierre
Teyssedou, Sophie Lahalle, Jean-Marc Ziza
Consultation de pathologie de la main
Service de Médecine Interne et de
Rhumatologie du
Groupe Hospitalier Diaconesses Croix
Saint Simon - Paris
www.hopital-dcss.org

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