THE SUBCUTANEOUS THREE-COMPARTIMENT FASCIOTOMY IN CHRONIC OVER-USE SYNDROME OF FOREARM

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Objective: In this study, the author explains the Subcutaneous variant of intervention of "Three-compartiment Fasciotomy" (2) (STF), a new surgical treatment to be used in chronic pan-compartmental syndrome of forearm, particularly in the Over-Use Syndrome (OUS), that can be the result of repetitive muscular strains.

Methods: The man's upper limb morphogenesis in phylogeny, adapted to the handling and use of instruments in various work activities, leads to consider a primary causal role of occupational factor (Over-Use) in the development of "overload disorders" (Fig. 1)

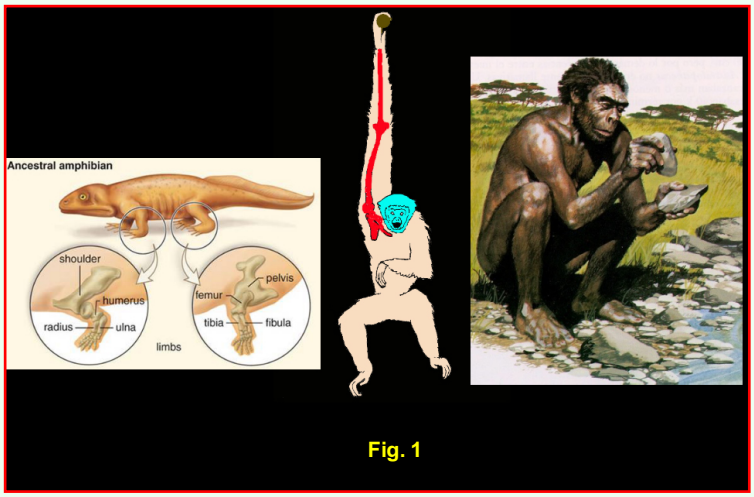


Fig. 1

Overloading can also become cumulative in the course of normal business activities: in agriculture, in factories, in offices, at home, etc. (Fig. 2) A unrecognized overuse mode is vibration; for example, in professional riders or the users of vibrating tools (percussion , rotation , etc.) - (Fig. 3).

Fig. 2

Fig. 3

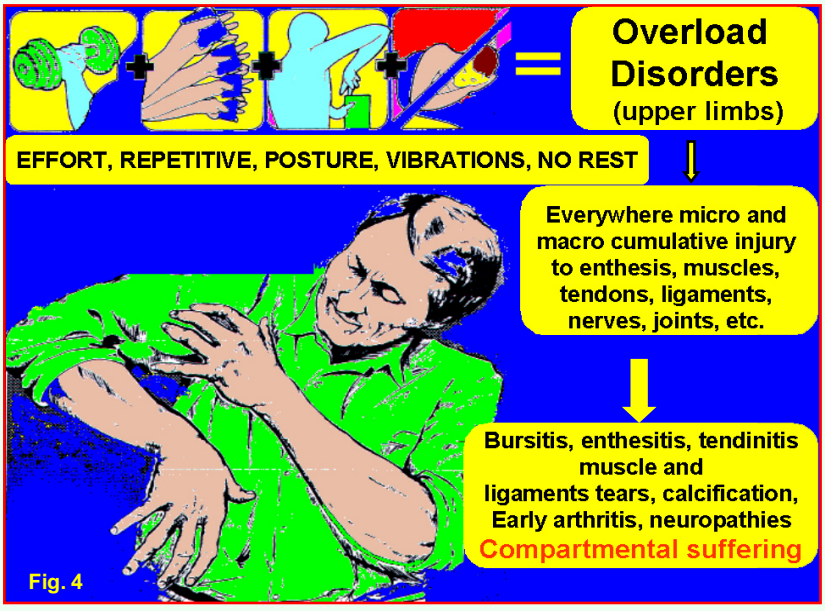


Fig. 4

The excessive Effort, the Repetitiveness, the abnormal Posture, the Vibrations, poor Rest can express themselves with enthesitis, tendinitis, teno-muscular breakage, early arthritis, neuropathies and mainly with the suffering compartment of the forearm.

Especially, in clinical appearance of Chronic Compartment Syndrome of the anterior compartment of the forearm, which we identified and studied in 1997 (1) – (Fig. 4).

Chronic Compartment Syndrome of the Anterior Compartment of the Forearm

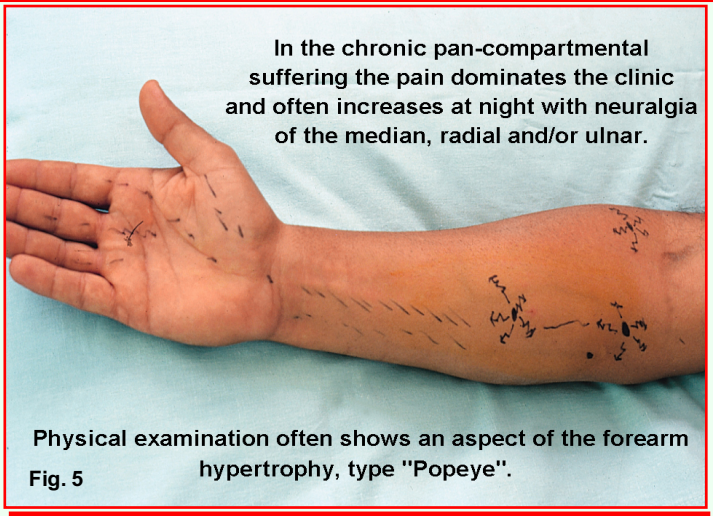
Very schematically, they can occur the following types:

1) - Tenderness on lacertus fibrosus or in the origin of the flexor carpi ulnaris sometimes with positive EMG ulnar nerve compression at the elbow.

2) - Tenderness on the flexor radialis carpi or flexor tendons in medium forearm and often it occurs early the Carpal Tunnel Syndrome.

3) - Tenderness on the pronator teres, where the median neuralgia may take the form of the pronator teres syndrome or writer's cramp.

4) - In the form of medial or lateral epicondylitis, variously associated with radial ulnar or median neuralgia, in the associated suffering with all of the three compartments of the forearm.



Physical examination often shows an aspect of the forearm hypertrophy, type "Popeye".

Fig. 5

However, in the pan-compartmental suffering the pain dominates the clinic and often increases at night with neuralgia of the median, radial or ulnar. Physical examination often shows an aspect of the forearm hypertrophy, type "Popeye" – Fig. 5.

Surgical Therapy in order to implement the microcirculation compartmental space

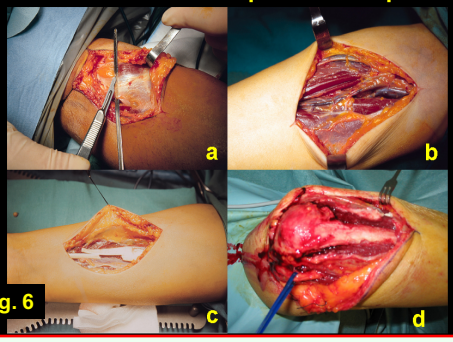


Fig. 6

Therapy should be considered in addition to the immediate improvement also prevention. Ie, to break the vicious circle, we must block the pathogenic process and allow recovery. This requires, as a first step, the suspension of all offensive activities with detection and correction of predisposing factors. The first approach is thus conservative with set-aside with guardians, prescription FANS, anti-edematous, vitamins, antioxidants; in some cases cortisone orally or infiltration and physiotherapy treatments.

Surgical treatment is recommended in compartmental symptoms with nervous suffering and and positive electromyography exam. Thus, according to the clinic, may be carried out section of the fibrous tendon (a), proximal fasciotomy median (b), or neurolysis of the median to the carpal or cubital fasciotomy with ulnar neurolysis, or fasciotomy anterolateral (c) with neurolysis of the radial (d), etc.

This, in order to implement the microcirculation in compartmental space (Fig. 6).

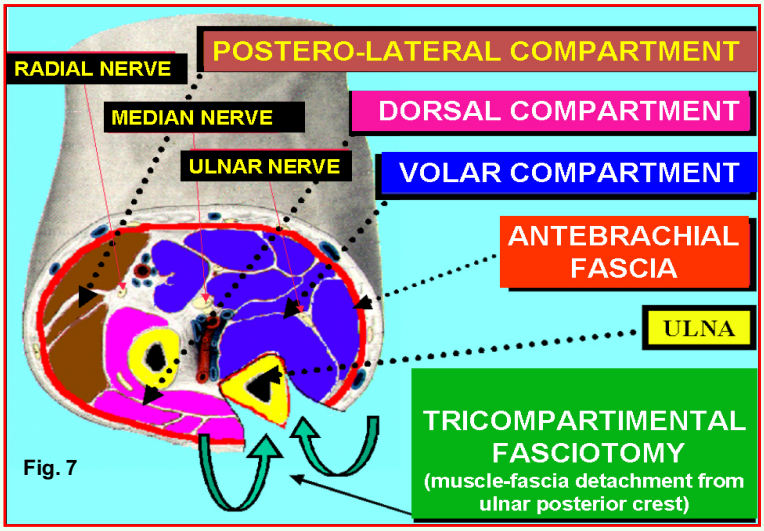
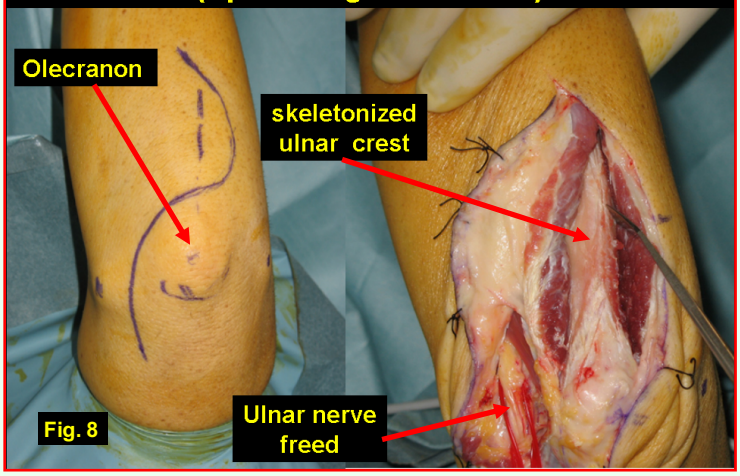


Fig. 7

By absence in the past of a specific surgical treatmet for the associated suffering of all the compartments, in 2001 we designed and introduced the Three-compartment Fasciotomy (TF), published in 2007, in a study of 46 cases treated, with excellent results.

The TF main indications are (2): tenderness on palpation simultaneously present epitrochlear and epicondylus and indicative EMG nerve suffering the median and / or ulnar. The TF rationale considers that the antebrachial fascia covering sleeve the three compartments of the forearm, the ulna inserting sides. With this anatomy you can not unpack all the compartments with a single sign retro-olecranon, which is cut through the antebrachial fascia on the ulnar margin, detaching the muscles at the sides (Fig. 7).

THREE-COMPARTMENT FASCIOTOMY (open surgical access)

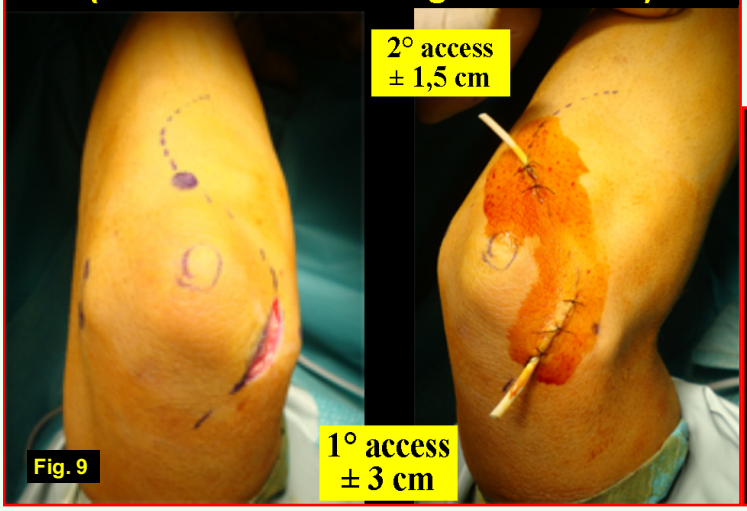


This is the Three-compartmet fasciotomy with the original open surgical access; visible to the right ulnar nerve freed and ulnar crest skeletonized (Fig. 8).

And now, this is the Three compartment fasciotomy subcutanous mini-open accesses, with two incisions: the first, of 3 cm, free the ulnar cubital tunnel; the second 1.5 cm is centered on the ridge just distal ulnar olecranon (Fig. 9).

The contemporary decompression of the three compartments is performed with myo-fascial disconnection by periostotomo, through the skin incision (Fig.10). With this, the resulting reduction in surgical time, the optimization of the operating compliance and, in particular, the disappearance of previous rare muscle hernias and residual strength loss.

THREE-COMPARTMENT FASCIOTOMY (sub-cutaneous surgical access)



Results: We checked our series of 74 cases and 96 interventions, from 2009 to 2015, with a mean follow - up of 3.6 years. Patients were evaluated for 5 parameters BRSS, modified, taking into account the degree of satisfaction, residual pain, recovery of strength, the scar, the resumption of the previous activities. With the results, which indicate that in over 95% of patients, the surgery was successful.

Conclusions: The OUS of the foream is a diffused "work related disease". With disease entities generally considered independent of each other but who in the over-use have the common cause. The medical and physiotherapy are the first step. If these don't resolve, the Three compartment Fasciotomy mini-open (sub-cutaneous surgical access) is simple, without contra-indication and, in our case study, has proved to be enough resolutive.

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