The Use of Fibrin Glue in the Treatment of Painful Neuromata

D. V. EGLOFF, and R. LINARTE

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Abstract

As a result of traumatic or surgical division of nerves, the occurrence of painful neuromata remains a challenge to therapy. The use of fibrin sealant (Tissucol) we present here is another possible therapeutic approach, in addition to the already numerous available methods to handle such problems.

The technique consists of:
1. Resecting the neuromata
2. Fixing the nerve stump in nonscarry tissue with Tissucol

The results on 27 neuromata (17 patients) were studied using objective and subjective criteria, with 78% of recoveries and 22% of failures.

Unfortunately the method is no panacea, but appears as a worthwhile alternative which compares favorably with other proposed treatments. It has three advantages: It is atraumatic, simple and quick. There are no contraindications.

The occurrence of a symptomatic neuroma after traumatic or surgical section of a sensitive peripheral nerve remains a problem not yet really well solved, as can be seen from the numerous different publications treating this subject. Indeed, the functional limitation resulting from the traumatic pathology of the hand – mutilating in itself – is further intensified by the problems linked to an amputation neuroma.

The large number of techniques described in the literature attests to the problems met in trying to elaborate a single and preferential way to solve them.

These various methods include prophylactic means and treatments such as tapping (or patting) [16]; infiltrating such substances as formol [1], phenol [2], alcohol [3], cephalorachidian liquid [4], and corticoids [5]; electrocoagulation, ligature or resection and burying into various tissues such as muscle [7], vessel [8], bone [9–11], another nerve [12–15] or also into inorganic materials like tantalum [16], gold [17] or silicon [18–20].

Since 1981, we have used a technique based on creating a “muff” or sheath to protect the nervous end with fibrin glue, which at the same time helps to set it in the best possible site and position, and this atraumatically.
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Method and Means

Between June 1981 and December 1983 we operated on 17 patients with 27 painful neuromata in the hand. In all cases the following technique was used: skin incisions made through previous scars, providing whenever possible flaps which gave easy access to the nerve and covered the glued nerve stump at its new location. The nerve and its neuroma were isolated from the surrounding tissues, often sclerotic, and from the collateral artery. The latter was ligated. The neuroma was sharply resected with the surgical knife and the new nerve stump was placed in a nonpressure zone, either dorsally or laterally, and fixed in that position with Tissucol.

All of our above-mentioned cases resulted from trauma sequelae with shortening of the skeleton. They included ten men and seven women, with an average age of 40 years, ranging between 15 and 64 years. Morbidity was twice as acute on the left side, with a marked predominance of P2-type [7] amputations, rather than P1 [4] and P3 [1] types.

Symptoms prior to the operation had been felt during 8 months on average, i.e., 3 months at the shortest, to a maximum period of 44 months. The postoperative follow-up averaged 24 months, i.e., between 11 and 35 months.

Assessment Criteria

We used objective as well as subjective criteria:

Subjective criteria were:
1. Pain
2. Functional hindrance

The scale adopted concerning the assessment of pain was:
Level I : no pain or sporadic pain
Level II : moderate pain (permitting normal activities and work)
Level III : acute pain impeding or preventing work

The scale covering functional hindrance was:
Level I : no functional hindrance, no impediment in professional life
Level II : some functional hindrance, however, work still performed with normal results
Level III : condition unchanged or worsened

Objective criteria were:
1. Tinel sign
2. Retraction sign

The scale regarding the Tinel sign was:
Level I : no sign
Level II : moderate sign, not impeding work
Level III : acute sign impeding work

As for the retraction sign, the scale was:
Level I : no sign
Level II : positive under tapping (patting)
Level III : positive under palpation or to the merest contact