Decompression of the median nerve at the wrist is a common surgical procedure for patients with carpal tunnel syndrome (CTS) and is usually successful [1–3]. We previously reported the postoperative prognosis on the basis of the pre-operative neurophysiological assessment [4, 5]. We concluded that in cases of “severe CTS” (absence of median sensory responses and increment of the median distal motor latency) [6], surgery is also indicated, although no postoperative normalization of electrodiagnostic values occurred despite the complete resolution of symptoms. We also noted the reappearance of the motor response in 1 of 2 cases in which it was absent pre-operatively, [4], and therefore we suggested that the operation was indicated even in “extreme CTS” [6]. Our conclusions were in agreement with previously reported data [7].

We have recently observed four cases of CTS in 3 patients with no clinical and neurophysiologic improvement.
after surgery even though no errors were made during the operation. These cases showed a particular pre-operative neurophysiologic picture characterized by a median distal motor latency (DML) at the wrist longer than 10 ms.

**Case reports**

**Patient 1**

A 55-year-old woman complained of severe and striking nocturnal paresthesias, pain and difficulty in fine finger movements. Neurophysiologic evaluation [8] showed a prolonged median DML at the wrist bilaterally (right, 12.3 ms; left, 11.9 ms), normal compound muscular action potential (CMAP, right, 8 mV; left, 7 mV) and absent median sensory responses (first and third digit-wrist). Forearm median motor nerve conduction velocity (MMNCV) was 48 m/s on the right and 54 m/s on the left side (CMAPs through median stimulation at elbow, 7 and 6 mV, respectively).

After decompression of the left median nerve, the patient referred immediate benefit with disappearance of paresthesias. After 12 days, she initiated mild hand activity. The following day, complete anesthesia and motor deficit of the left median region appeared. One month later, a nerve conduction study showed the absence of the median thenar CMAP (median sensory responses remained undetectable) and complete denervation of the median innervated hand muscles through needle examination.

One year later, because of striking and painful symptoms, she requested surgery for the other hand. On this side, the conduction study showed a severely prolonged median DML (11.7 ms, CMAP 8 mV). The patient was warned about the risk of surgery, but she decided to proceed and after operation she did not refer benefits. Two months later, she had bilateral absence of the median motor and sensory responses on the hand.

**Patient 2**

A 65-year-old man complained of bilateral hand paresthesias starting several years earlier. Conduction study of the median nerves showed a bilateral, marked increment of DMLs (right, 11.0 ms; left, 8.8 ms) with normal CMAPs (right, 7 mV; left, 6 mV) and no sensory responses. Forearm MMNCV was 47 m/s on the right side and 51 m/s on the left (CMAPs through median stimulation at elbow, 10.1 and 7.5 mV, respectively). Furthermore, a bilateral slowing of the motor ulnar nerve at the cubital tunnel was present (right, 33 m/s; left, 31 m/s).

On the basis of the previous case, we advised against surgery but the patient requested the operation nevertheless. Even in this case, the patient referred immediate benefit, but ten days later, complete anesthesia with plegia of the median hand region appeared. Neurophysiologic examination, performed one month later and the following year, showed on both occasions complete denervation of the thenar muscles with absent median motor and sensory responses and no contralateral changes. Although the electrophysiologic study showed the failure of surgery, the patient referred benefit with disappearance of pain. He requested contralateral decompression. However, we did not proceed because of the previous experience.

**Patient 3**

A 56-year-old woman complained of severe bilateral, striking nocturnal paresthesias, pain, and difficulty in fine finger movements. Electrodiagnostic test showed prolonged median DML on both sides (right, 10.9 ms; left, 8.2 ms), with normal CMAPs (right, 5 mV; left, 7 mV) and absent median sensory responses. Forearm MMNCV was 47 m/s on the right side and 50 m/s on the left (CMAPs through median stimulation at elbow, 10.1 and 7.5 mV, respectively).

The paresthesias disappeared and the patient referred immediate benefit after surgical decompression. Twenty days later, she initiated a mild hand activity. The following day, complete anesthesia of the right median innervated hand region with motor deficit appeared. Electroneurography of this hand, 40 days after surgery, showed absent median CMAP with complete denervation on needle examination of the median hand muscles.

**Discussion**

In all our three patients, there was no evidence of peripheral neuropathy. Ultrasound evaluation of the wrist failed to show any abnormalities. Analysis of chromosome 17, to evaluate hereditary neuropathy with liability to pressure palsies, was normal in all cases. Surgical decompression of the median nerves was performed in our orthopedic department, by open release without internal neurolysis. During the operation, the hemostatic tourniquet was not used. In all cases, the median nerve appeared markedly narrowed with some petechiae on its surface (this picture is frequently observed in severe nerve compression). The carpal tunnel was narrowed without anatomical anomalies. No difficulty occurred during the surgery. At the post-operative patient-oriented evaluation, using a validated, self-administered question-