AMMAR YASEEN MANSOUR

CASE REPORT

Carpal Tunnel Syndrome Complicated by Complete Rupture of Median Nerve

Carpal tunnel syndrome is a quite known syndrome. It has been deeply studied in regard to its etiology, symptomatology, and prognosis. Severe prolonged pressure on the median nerve can completely stop its function, clinically and electrically (EMG). Nevertheless, the diameter of the nerve can extremely be reduced at the high-pressure zone. Thereby, the nerve presents the famous sand-hour deformation. Hereafter will be a presentation of an unusual carpal tunnel syndrome complicated by complete rupture of the median nerve. To my knowledge, this should be the first reported case in the medical literature.

A male patient, of 24-year-old, presented to the clinic with a complain of complete paralysis of his right thumb, and complete loss of sensitivity in thumb, index, and middle fingers of the same hand. The thumb was strongly fixed to the palm, ***figure (1).*** Active and passive motions in the trapezo- metacarpal and metacarpo- phalangeal joints of thumb were quite absent.

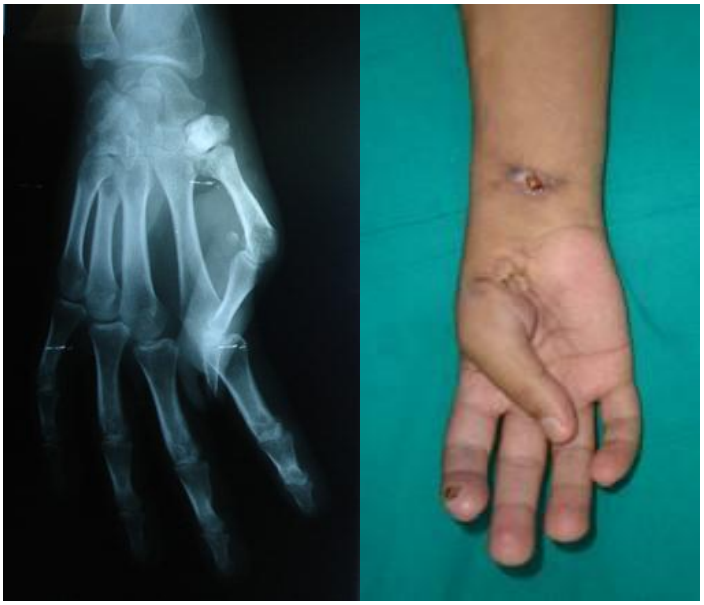

Figure (1): Pre-operative view of the right hand
The thumb of the right hand was fixed in the position of extreme adduction. Two ulcers were present, one in the thenar eminence whereas the other was in the forearm. Small recently induced burn in the bulb of the index finger. X-ray of the right hand shows necrosed trapeze, rizarthrose and reduced first- second metacarpal angle.

A proximately 1- year old cutaneous ulcer, reluctant to medical care, was seen in thenar region. Another cutaneous ulcer of same age was also found in the distal third of the forearm. Because of lack of sensitivity a thermal burn has been recently induced in the bulb of right index, ***figure (1).*** On radiology. Rather than the rizarthrose, there was marked sclerosis of the

right trapeze, ***figure (1).*** EMG of right median nerve confirmed the complete paralysis of the nerve, ***figure (2).***

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الدكتور عصام سليمان
أخصائي في الأمراض العصبية والنفسية
مجاز دولة من ألمانيا الغربية
تخطيط دماغ وتخطيط أعصاب وعضلات

EMG-REPORT

الاسم : السيد سامر
التاريخ : 12 . 11 . 28
الطبيب المعالج : الزميل د. عمار منصور
الشكوى : عقابيل شديدة لأذية رضية في اليد اليمنى إثر حادث سير منذ نحو عام (إلى جانب أذيات أخرى في أماكن أخرى). تقفع الإبهام الأيمن في وضعية التقريب والثني وحركته القاطعة والمنقطعة شبه غائبة على كافة المستويات.

1- تخطيط الأعصاب الكهربائي : للطرف العلوي الأيمن:

العصب	Distal Latency (ms)	NCV (m/s)	Amplitude (mV)
حركيا :			
الزندي (مبعدة الخنصر)	3.3	51.3	7.5
المتوسط (مبعدة الإبهام القصير)		غياب أية استجابة	
حسيا :			
الزندي (بالخنصر)	2.1	56.3	0.02
المتوسط (بالسبابة/ والوسطى)		غياب أية استجابة قابلة للقياس	

الخلاصة : المتوسط الأيمن لم يستجب للتنبيه البعيد (عند الرسغ) والقريب (عند المرفق)، حركيا وحسيا، على السواء. الناقلية الكهربائية للزندي، حركيا وحسيا، سويّة .

2- النتيجة : معطيات تخطيط الأعصاب الكهربائي ENG للطرف العلوي الأيمن تثبت وجود أذية تامة في العصب المتوسط في مستوى الإصابة الرضية في اليد اليمنى.

Figure (2): EMG of right median nerve

median nerve = المتوسط
ulnar nerve = الزندي
M. abductor pollicis brevis = مبعدة الإبهام القصيرة
M. abductor digiti minimi = مبعدة الخنصر
no response = غياب أية استجابة

Surgical Findings:

Unexpectedly, there was a complete rupture of the median nerve. The gap, of 1.5-2 cm, between the cut endings of the nerve was bridged by the median artery and its branches, ***figure (3).*** The cut endings of the nerve were quite smooth without any evidence of neurofibroma formation. The surrounding structures were contact, sliding throughout a healthy environment.

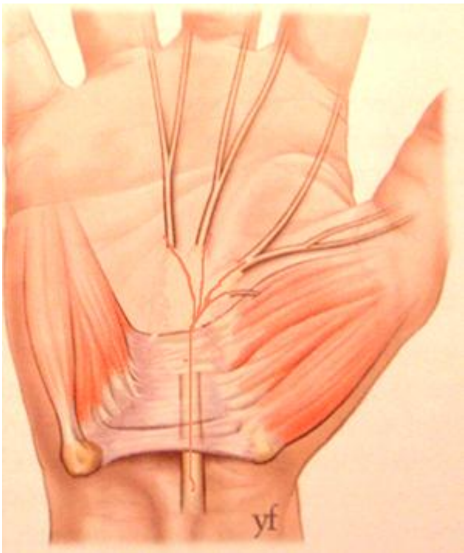

figure (3): Drawing of the surgical findings
there was a complete rupture of the median nerve.
Notice the contact median artery and its branches bridging the gap between the cut endings of the nerve.

The thenar cutaneous ulcer has been found too deep eroding the most bloc of the thenar muscles; *M. pollicis abductor brevis*, *M. opponens pollicis*, *M. pollicis flexor brevis*. At its fond, was the contact tendon of the long flexor muscle of thumb.

The first, second, and the third digital nerves have been anastomosed to the proximal end of the nerve. The thenar branch of the median nerve has been left without repair because of the disruption of the muscle- target; the thenar muscles. The thenar ulcer has been debirided. A full- thickness skin graft was necessary to cover the resulting skin defect. Whereas the forearm ulcer has been easily managed by local solutions.

Discussion:

It was surprising to find the median nerve in such condition because of an overwhelming pressure exercised upon it. I have calculated a number of reasons for what I presumed to be a rare, maybe unique, complication of the carpal tunnel syndrome.:

1- The median nerve was the only victim of such etiology. It is obvious that any presumed cutting force wouldn't respect the neighboring structures; tendons, arteries, particularly the median artery.

2- There was no local evidence of a penetrating criminal force. Neither the skin, nor the inside local tissues gave any index of such invasion. In contrast, they have been of normal appearance and elasticity.

3- There was no neurofibroma in the proximal end of the ruptured nerve. This should be a strong evidence of the nature of the criminal force, that played on the nerve nutrition and nerve regeneration.

4- The extremely adducted thumb for more than one year could explain the cause of the hyper pressure exercised over the median nerve. The trapeze sclerosis maybe the other index of such etiology.

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In another context, one could read:

- **The Neural Conduction (Innovated Conception)**
- **Neural Conduction in Neural Fiber (PowerPoint Presentation)**
- **The Sensory Receptors, The Genius of Creation and the Beauty of Creature (Innovated Conception)**
- **The Neural Conduction in the Synapses (Innovated Conception)**
- **The Neural Conduction in Synapses (PowerPoint Presentation)**
- **The Node of Ranvier, the Equalizer (Innovated Conception)**
- **The Node of Ranvier, the Equalizer (PowerPoint Presentation)**
- **The Philosophy of Pain, Pain Comes First (Innovated Conception)**

- **The Philosophy of Form, (Innovated Conception)**
- **The Spinal Injury, the Pathology of the Spinal Shock, the Pathology of the Hyperreflexia (Innovated Conception)**
- **The Nerve Conduction Study, The Wrong Hypothesis is the Origin of the Misinterpretations (Innovated Conception)**
- **The Wallerian Degeneration, Attacks the Motor Axons of Peripheral Nerve, while Conserves its Sensory Axons(Innovated Conception)**

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