VISUAL ELECTRONEUROGRAPHY
(VISUAL ENOG)

A practical, valid, cost effective method of performing electrical evaluation of patients with mononeuritis multiplex (herpes simplex Bell's palsy and herpes zoster facial paralysis)

In the surgical management of facial paralysis, electoneurography (ENOG) results are often used to select patients for treatment, and these tests must be fully understood to make the best decision. In the non surgical management of facial paralysis, these electrical test results are used primarily to predict prognosis and, since ENOG testing has yet to standardized, ENOG is not necessary and has been replaced by **Global Maximal Stimulation Testing** (MST).

ENOG test-retest variability between both sides of the face and between tests on different days ranged as high as 50% with an average difference of 20%. Further the sources of ENOG testing error are considerable:

SOURCE OF ENOG TEST ERROR

(1.) Electrode placement of both the recording and stimulating electrodes.
(2) Skin impedance.
(3) Masseter muscle artifact.
(4) Patient intolerance.
(5) Equipment variability.
(6) Lack of standardization.
(7) Inter-test variance.
(8) Inter-side results variance.

In independent observations in Oakland, California and Johannesburg, South Africa it was noted that simple percutaneous testing using the Hilger Facial Nerve Stimulator, Model H3, (WR Medical Electronics Co., 123 North Second Street, Sillwater, MN 55082), or similar instruments, could be used to **visually** predict within a 25% range, the actual difference between the **measured** compound muscle action (CAP) recorded on each side of the face.

TEST PROCEDURE:

The nerve stimulating probe is applied to the nerve trunk and moved to find the best point for stimulation. The milliamps are increased to level where good facial motion is elicited. THIS LEVEL IS USUALLY ABOUT 6-7 MA (dependent on the patients' body build) which is well tolerated by the patients assuring good patient compliance with the test. The unaffected side is tested first to determine the appropriate level, and this same level is used to stimulate the affected side. The results are recorded in units of 25%. That is, the affected side is 100%, 75%, 50% or 25% of the normal side. An article concerning statistical validity of this observation is being prepared for publication. If this visually recorded event is less than 25%, and if decompression surgery is contemplated, ENOG can be performed.

Knowing that the cost of ENOG is about $200 per test, and serial tests are suggested to select patients for surgery, the cost of such evaluation can exceed $1000 per patient. The cost of an in office portable nerve stimulator is considerably less and patient convenience and acceptance greatly enhanced. We suggest that first **VISUAL ENOG** be performed, second **GLOBAL MST** next be used if there are questions about reliability, and lastly ENOG be reserved for those where questions still exist about the presence of nerve degeneration.

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