Significance of somatosensory evoked potentials in diagnosis and follow-up control in cases of damage to the lingual and/or mental nerve.

GRUBWIESER G.¹, PFAUSLER B.³, GRUNERT I.², SCHMUTZHARD E.³, PUELACHER W.¹, LÖSCHER W.³
¹University Clinic of Oral- and Maxillofacial Surgery, Medical University of Innsbruck
²Department of Restorative and Prosthetic Dentistry, Medical University of Innsbruck
³University Clinic of Neurology, Medical University of Innsbruck

Neuropysiology of the sensory pathway:

Gyrus postcentralis
Ncl. ventr. posteromed thalami
Ganglion trigeminale
Ncl. sens. princ. n. trigemini

Example: f, 48a, 1 week after Extr. of 35, paresthesia in the area of innerv. N. ment.

Stimulator
Amplifier
Integrator

Detecting stimulus
Raw potential

Stimulation
Summation

Averaging of 400 single-stimuli leads to a significant response signal

Pathological results were significantly more often seen in SSEPs of the lingual nerve compared to mental nerve after operative removal of 3rd molars.

Distribution of normal versus pathological results in lingual nerve SSEP's in all investigated Subjects.

Distribution of normal versus pathological results in mental nerve SSEP's in all investigated Subjects.

Conclusions:

- SEPs, triggered by electrical stimulation in the responsive area of the lingual or mental nerve are an objective parameter in the investigation of function and damage of trigeminal branches.
- The reproducibility of a normal potential as well as the good separation accuracy from normal to sensory deficit allows the use of this method in routine diagnostics.
- Possible applications range from the documentation of the afferent trigeminal nerve function to a reliable postoperative detection of a nerval lesion.
- Follow-up controls within the context of regeneration or reafferentiation can be objectively documented.
- However, the method presented should be considered a supplement to the clinical diagnosis. It cannot replace the conscientious clinical assessment.

Seddon Classification

peripheral nerve injury

Study results over 12 years (2004-2016):

- 10 mentals and linguals SSEP's were evaluated in 10 healthy subjects to set normals
- 164 patients were investigated to document postoperative lesions of the lingual a/o mental nerve (7 of them on either side)
- Reduction in latency a/o amplitude was found in all subjects who showed clinical signs.
- Follow-up investigations were performed in 33 patients — 15 of them showed signs of reafferentiation clinically and also electrophysiologically in the way of normalization of potentials.

Electropysiological Diagnosis (SSEP) of the lingual/mental nerve:

SSEP-Results after 3rd molar removal:

SSEP Linguals (N=51)
SSEP Mentalis (N=27)

Distribution of normal versus pathological results in all investigated Subjects.

SSEP Lingualis (N=31)
SSEP Mentalis (N=75)